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ABSTRACT

The data and analyses in this report are from the first (1980) wave of information from the National Center for Education Statistics study, "High School and Beyond," a longitudinal study of U.S. high school seniors and sophomores. Data are available for 30,030 sophomores and 28,240 seniors, a total of 84 percent of the 69,662 students in the sample. Catholic schools, which constitute about two-thirds of the total private sector, and other private schools are separately compared to public schools. For some analyses 11 high-performance private schools and 12 high-performance public schools are included in the comparison. The report covers four major areas of interest in the comparison of public and private schools: student body composition, resources available, the functioning of the schools, and the outcomes for students. Findings indicate that important factors in bringing about higher scholastic achievement in private and Catholic schools than in public schools are the greater academic demands and more ordered environments. Within the public schools, students who are better disciplined and are in schools with more ordered environments also achieve more highly. Appendices contain statistical references, items from the student and school questionnaires used in the analyses, and a bibliography. (Author/MLF)

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Contractor Report

Public and Private Schools

An Analysis of High School and Beyond
a national longitudinal study for the 1980's

EA 014 598

Conducted for the
National Center for Education Statistics
U. S. Department of Education
by
The National Opinion Research Center
Chicago, Illinois

PUBLIC AND PRIVATE SCHOOLS

A Report to the National Center for Education Statistics
under Contract No. 300-78-0208
by the National Opinion Research Center

James Coleman, Thomas Hoffer, and Sally Kilgore

November 1981

Public and Private Schools

National Opinion Research Center

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November 1981

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PREFACE

The data and analyses presented in this report are from the first (1980) wave of the National Center for Education Statistics study, High School and Beyond, a longitudinal study of U.S. high school seniors and sophomores. This study was conducted for NCES by the National Opinion Research Center at the University of Chicago.

A detailed report on sample design and sampling errors, High School and Beyond: Sample Design Report, is available, so the sample will be described only briefly here. The sample was a two-stage stratified probability sample with schools within a stratum drawn with a probability proportional to their size. Once a school was selected, up to 36 sophomores and 36 seniors were drawn randomly from the students enrolled in each selected school.

Several special strata were included in the sample design. Schools in these special strata were selected with probabilities higher than those for schools in regular strata to allow for special study of certain types of schools or students. The following kinds of schools were oversampled:

- Public schools with high proportions of Hispanic (Cuban, Puerto Rican, and Mexican) students.
- Catholic schools with high proportions of minority group students.
- Public alternative schools.
- Private schools with high proportions of National Merit Scholarship finalists.

Substitutions were made for noncooperating schools in those strata where it was possible. Out of 1,122 possible schools, students at 1,015 schools and school administrators from 988 schools filled out questionnaires.

In many schools the actual number of seniors and sophomores was less than the target number for several reasons. First, in some schools fewer than the number 36 sophomores or 36 seniors were enrolled. This reduced the number of eligible students from 73,080 (72 students in each of 1,015 schools) to 69,662. Second, 8,278 students were absent on the survey date. Third, 1,982 students, or in some cases their parents, declined to participate, exercising their right in a voluntary survey. Substitutions were not made for non-cooperating students. Finally, 1,132 cases were deleted because they contained only very incomplete information. Thus, data are available for 30,030 sophomores and 28,240 seniors. This represents a completion rate of 84 percent: 58,270 out of the 69,662 eligible students. In addition to the students in the regular sample, data were collected from friends and twins of participating students.

Weights were calculated to reflect differential probabilities of sample selection and to adjust for nonresponse. Using appropriate weights yields estimates for high school sophomores and seniors in the United States and separate estimates for schools or students classified in various ways, such as by geographical region or school type.

Information of several sorts was obtained in the survey. Students completed questionnaires of about one hour in length, and took a battery of tests with a total testing time of about one and one-half hours. School officials completed questionnaires covering items of information about the schools. Finally, teachers gave their perceptions of specified characteristics of students in the sample whom they had had in class, to provide information beyond the students' own reports about themselves.

This report is one of several analyzing High School and Beyond base year survey data. The study was designed to be relevant both to many policy issues and to many fundamental questions concerning youth development and educational institutions. It is intended to be analyzed by a wide range of users, from those with immediate policy concerns to those with interests in more fundamental or long-range questions.

As succeeding waves of data on a subsample of these students become available (at approximately two-year intervals), the richness of the dataset, and the scope of questions that can be studied through it, will expand. In addition, use of the data in conjunction with NCES's study of the cohort of 1972 seniors (also available from NCES), for which data at five time points are now available, enriches the set of questions that can be studied.

The data are available on computer tape for a nominal fee from:

Statistical Information Office
National Center for Education Statistics
1001 Presidential Building
400 Maryland Avenue, SW
Washington, D.C. 20202
Phone: (202) 436-7900

ACKNOWLEDGMENTS

The design of HIGH SCHOOL AND BEYOND was initially developed by the Longitudinal Studies Branch of the National Center for Education Statistics. Edith M. Huddleston, NCES project officer for HIGH SCHOOL AND BEYOND, and William B. Fetters, mathematical statistician, have guided this project since its inception, and have been responsible for many aspects of the research design. The current NCES project officer is Samuel S. Peng. The entire staff of NCES's Longitudinal Branch has devoted long hours to maximizing the usefulness of this study for American secondary education.

A study of this scope and magnitude would not have been possible without the active cooperation of many persons at various levels of educational administration: Chief State School Officers, Catholic Archdioceses and other private school organizations, principals and teachers in the schools, and of course, the students and their parents. The expertise, support, and persuasiveness of numerous study coordinators at participating schools was especially critical to the successful conduct of the study. Those who will use these data for the study of American education are deeply indebted to all these people.

A second debt is owed to all those people on the field and project staff of HIGH SCHOOL AND BEYOND, whose efforts brought into being the data that will make possible the study of issues involving young people and their schools, data on which the present report is based.

Special thanks are due to members of the National Planning Committee, who have been active in advising NCES on the design, implementation, and uses of the study: Ellis B. Page, Chairman (Duke University), Robert F. Boruch (Northwestern University), Bruce K. Eckland (University of North Carolina, Chapel Hill), Barbara Heyns (New York University), David S. Mundel (Employment

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The National Opinion Research Center (NORC), under the direction of NCES, took responsibility for the remainder of the design and conducted the base-year survey; NORC's preliminary analysis of the base year data contributed to the development of this publication. James S. Coleman served as Principal Investigator at NORC, with Carol B. Stocking as Project Director. Other contributing NORC staff members were Fansayde Calloway, who directed field work for the project, and Antoinette Delk, Larry Dornacker, Martin Frankel, and Natalie Suter.

Of the support services at NORC that, by efforts beyond the call of duty, made possible the completion of this report at this time two deserve special mention: Data Processing and Word Processing, both of which have our deep gratitude. We want especially to acknowledge our debt to Toshi Takahashi, manager of Word Processing, with whom it was a joy to work.

SUMMARY OF MAJOR FINDINGS

One of the emerging policy questions in American education in recent years has been the question of the role that private schools should play. Although any answer to this question depends in part on values, it also depends on facts. First, how well do public and private schools work for children? Are private schools divisive, and, if so, along what lines? Are private schools more easily managed than public schools, and, if so, why?

Recent policy discussions concerning private schools in the United States have included both proposals that would increase their role in American education and proposals that would decrease their role. As an example of the latter, it has been proposed that private schools meet a racial composition criterion in order to maintain tax-exempt status. On the other side, there have been proposals for tuition tax credits for private schools, and, at the state level, proposals for educational vouchers.

These policy proposals are based in part on assumptions about the current roles and current functioning of public and private schools in America. The report is intended to provide evidence relevant to such proposals.

Using data collected in the first wave of the National Center for Education Statistics study, HIGH SCHOOL AND BEYOND, the report covers four major areas of interest in the public and private schooling issue: student composition within the public and private sectors (chapter 3), resources available in these schools (chapter 4), the functioning of these schools (chapter 5), and the outcomes for students in the schools (chapter 6). The responses in 1980 from representative samples of approximately 58,000 sophomore and senior students in 1,015 public and private secondary schools, as well as their respective school officials, are used in the analysis. Catholic schools, which constitute about two-thirds of the total private sector, and other private schools are separately compared to public schools in the report.

Listed below are a number of the premises underlying policy proposals that would increase or decrease the role of private education in the United States. Following each of these assumptions is a brief summary of our relevant findings.[1]

Premises underlying policies that would increase the role of private schools

1. Private schools produce better cognitive outcomes than do public schools (chapter 6).

The evidence from chapter 6, supplemented by evidence from chapter 7, is that private schools do produce better cognitive outcomes than public schools. When family background factors that predict achievement are controlled, students in both Catholic and other private schools are shown to achieve at a higher level than students in public schools. The difference at the sophomore level, which was greater for Catholic schools than for other private schools, ranged from about a fifth of the sophomore-senior gain to about two-thirds the size of that gain (i.e., from a little less than half a year's difference to something more than one year's difference). This evidence is subject to a caveat: despite extensive statistical controls on parental background, there may very well be other unmeasured factors in the self-selection into the private sector that are associated with higher achievement.

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[1] The points listed below constitute the body of the concluding chapter (8).

We examined gains from the sophomore to the senior year in the three sectors, we introduced three differing sets of assumptions for examining this growth, to get a range of estimates. Two sets of assumptions probably favor the public sector and one probably favors the private sectors. Under all sets of assumptions, achievement growth was greater in both private sectors than in the public sector except for reading in the Catholic schools, which gave different results under different assumptions.

An important supplement to all these results is found in the high-performance public and private schools. Performance was much higher in both of these sets of schools than in any of the three sectors (section 6.1), although these schools could not be separately studied in the extended analysis of section 6.2 because of ceiling effects in achievement scores.

2. Private schools provide better character and personality development than do public schools (chapter 5).

Little evidence on character and personality development was provided in this report. Students in other private schools show slightly higher levels of self-esteem as sophomores and higher gains from the sophomore to senior year in fate control than students in public or Catholic schools. The inference that there is greater growth on both these dimensions in other private schools is strengthened by the fact that students in high-performance private schools showed even higher levels as sophomores, and similarly high sophomore-senior gains, while students in high-performance public schools did not, despite the fact that the parental backgrounds of students in the latter schools are higher than those in other private schools. The fact that the other private and high-performance private schools have less than half the student-teacher ratio than schools in the other sectors suggests that the difference might be due to this. Two points should be recalled, however, in assessing this evidence: first, the other private sector is especially diverse; and second, our sample of schools in that sector is especially weak. Thus the conclusions on this point must be regarded as merely an indication that further examination is warranted.

3. Private schools provide a safer, more disciplined, and more ordered environment than do public schools (chapter 5).

The evidence is strong that this premise is true. The greatest difference found in any aspect of school functioning between public and private schools was in the degree of discipline and order in the schools (sections 5.3 and 5.4). The Catholic and other private schools appear somewhat different in their discipline and behavior profiles, with students in other private schools reporting more absences and class-cutting but also more homework, fewer fights among students, and greater teacher interest in students. However, in all these respects, both sectors showed greater discipline and order than the public schools.

4. Private schools are more successful in creating an interest in learning than are public schools (chapter 5).

There is little evidence to confirm or disconfirm this premise in the report. The sectors differ only slightly in student responses to the two direct questions concerning interest in school, and there is not much to be inferred from indirect evidence presented in the report.

5. Private schools encourage interest in higher education and lead more of their students to attend college than do public schools with comparable students (chapter 6).

The evidence on this premise is toward a positive answer, but it is not fully consistent. There is evidence that students have higher college aspirations and expectations in private schools than do students from comparable backgrounds in public schools, but it is not clear to what extent the private schools function to generate these overall higher aspirations and expectations. The evidence does indicate that Catholic schools function to decrease the differences between students from different social backgrounds.

6. Private schools are smaller and thus bring about greater degrees of participation in sports and other activities than do public schools (chapter 5).

The evidence shows that this premise may be true for other private schools (though again a caution is necessary about generalization from the weak sample of other private schools). The premise is not true for Catholic schools compared to public schools. The fact that Catholic schools are smaller in size than public schools does not result in increased participation in extracurricular activities.

7. Private schools have smaller class size, and thus allow teachers and students to have greater contact (chapter 4).

The other private schools have sharply lower student-teacher ratios than the public schools, while the Catholic schools have slightly higher ratios. There are fewer than half the students per teacher in other private schools than in public or Catholic schools (table 4.2.1). No direct evidence on contact between students and teachers is presented.

8. Private schools are more efficient than public schools, accomplishing their task at a lower cost.

The report contains no evidence on this premise.

Premises underlying policies that would decrease the role of private schools

1. Private schools are socially divisive along income lines, creaming the students from higher income backgrounds, and segregating them into elite schools (chapter 3).

The evidence on this premise works in two directions. First, among the three major sectors, the other private schools contain students from somewhat higher income backgrounds and the Catholic schools contain students from slightly higher income backgrounds than the public schools. The differences are primarily at the highest and lowest income levels, with all three sectors having a majority of students in a broad middle-income category ranging from $12,000 to $38,000 a year, and similar proportions at different levels within this range. Second, the internal segregation by income within each sector goes in the opposite direction with the public sector showing slightly higher income segregation than either the Catholic or other private sectors. However, income segregation is not high within any sector. The end result of these two forces acting in opposite directions is that U.S. schools as a whole show slightly greater segregation by income than would be the case if private school students of differing income levels were absorbed into the public schools in the same way that public school students of differing income levels are currently distributed among schools.

2. Private schools are divisive along religious lines, segregating different religious groups into different schools (chapter 3).

The evidence is strong that this is true. Besides the 30 percent of private schools that are Catholic, enrolling 66 percent of all private school students, 25 percent of private schools, enrolling 12 percent of private school students, are affiliated with other religious denominations. Examining religious segregation solely in the Catholic/non-Catholic dimension, the report shows that the great majority of Catholics are in public schools, but that over 90 percent of the students in Catholic schools are Catholic. Within each sector, the Catholic/non-Catholic segregation is least in the Catholic schools themselves, greatest in the other private schools. The overall impact of the between-sector segregation and the differing segregation within sectors is, as might be expected, that schools in the United States are more segregated along Catholic/non-Catholic lines than they would be if private school students were absorbed into the public schools.

3. Private schools are divisive along racial lines, in two ways: they contain few blacks or other minorities, and thus segregate whites in private schools from blacks in public schools; and the private sector itself is more racially segregated than the public sector (chapter 3).

The evidence shows that the first of these premises is true with respect to blacks but not with respect to Hispanics and that the second is not true with respect to blacks or Hispanics. The end result with respect to Hispanics is that the segregation of U.S. schools is a little different from what it would be if there were no private schools.

Catholic schools enroll less than half as high a proportion of blacks as the public schools, and other private schools only about a quarter as high a proportion. Internally, however, the blacks and whites in the private sectors are considerably less segregated from one another than they are in the public sector. The end result of these two opposing forces, between-sector and within-sector, is that the segregation of black and white students in U.S. schools is no greater and no less than it would be if there were no private schools, and their students were absorbed into the public sector, distributed among schools as public sector black and white students are now distributed.

4. Private schools do not provide the educational range that public schools do, particularly in vocational and other nontraditional courses or programs (chapter 4).

The evidence on this premise is that it is correct. Schools in both the Catholic and other private sectors provide primarily academic programs and have few vocational or technical courses. Even in academic areas, however, some of the smaller schools in the other private sector have a limited range of subjects, as exemplified by the fact that 44 percent of students in the other private sector are in schools with no third year foreign language courses. The lesser educational range of the private sector is also shown by the more comprehensive character of the high-performance public schools compared to the high-performance private schools.

5. Private schools have a narrower range of extracurricular activities, and thus deprive their students of participation in school activities outside the classroom (chapter 5).

This premise is almost the direct opposite of premise 6 on the other side, so the answer is the same as was given there. Students in Catholic and public schools show about the same amount of participation in extracurricular activities, while students in other private schools show more. Thus this premise is not correct.

6. Private schools are unhealthily competitive, thus public schools provide a healthier affective development (chapter 5).

The report provides no direct evidence on this premise, but the indirect evidence suggests that something like the reverse is true for the comparison between the other private and public schools. (See premise number 2 in the preceding section.)

7. Facilitating the use of private schools would aid whites more than blacks and those better off financially at the expense of those worse off; as a result, it would increase racial and economic segregation (chapter 3).

It is not possible with this data to directly answer this question. The results of the analysis carried out in chapter 3 indicate that family income exercises an important independent influence on the probability that a given student will receive a private education particularly in a Catholic school. The effect of income on probability of enrollment in Catholic schools is positive and significantly stronger for blacks than for whites since blacks have a substantially lower average income than whites. Thus, the evidence indicates that the current underenrollment of blacks in private secondary schools is, to a significant extent, attributable to their lower income.

Insofar as the effect of family income reflects a price effect, these findings suggest that policies designed to reduce the cost of private education to families would result in a reduction of the economic and racial segregation that is currently found between sectors. This is because lower-income students and blacks would be expected to shift into Catholic schools at rates that are equal to or greater than higher-income and white students. Further research, using data that are more adequate to the problem at hand, may find that such an extrapolation is not valid. The available evidence strongly suggests, however, that a significant interest in the alternative that private schools represent is present among minorities and lower-income families.

Additional results relevant to the policy question of facilitating or constraining use of public schools:

1. Catholic schools more nearly approximate the "common school" ideal of American education than do public schools, in that the achievement levels of students from different parental educational backgrounds, of black and white students, and of Hispanic and non-Hispanic white students are more nearly alike in Catholic schools than in public schools or other private schools. In addition, the educational aspirations of students from these different backgrounds are more alike in Catholic than in public or other private schools.

2. Important factors in bringing about higher scholastic achievement in private schools than in public schools are the greater academic demands and more ordered environment in the private schools. The evidence shows not only that the sectors differ greatly on these dimensions, but also that within the public schools, students who are better disciplined and are in schools with more ordered environments achieve more highly. These results provide information that is relevant not only to private-school policies, but also to the functioning of all schools, public or private.

It may or may not be useful to attempt to sum up the overall implications for the premises underlying policy arguments to facilitate or constrain the use of private schools. Some of the premises on each side are confirmed, some on each side are disconfirmed. It is hard, however, to avoid the overall conclusion that the factual premises underlying policies that would facilitate use of private schools are much better supported on the whole than those underlying policies that would constrain their use. Or, to put it another way, the constraints imposed on schools in the public sector (and there is no evidence that those constraints are financial, compared with the private sector) seem to impair their functioning as educational institutions, without providing the more egalitarian outcomes that are one of the goals of public schooling.

CHAPTER 1

INTRODUCTION

American elementary and secondary education has been overwhelmingly education in public schools, supported by taxes and governed by local school boards. There have been changes recently in the structure of support and control, with state and Federal governments playing increasingly important roles in both respects. But the overwhelmingly public-school character of elementary and secondary education has remained largely unchanged. For many years, the percentage of American children in private schools has been in the neighborhood of 10 percent, as it is currently.

However, the role of private schools in American education has emerged as an important policy question in recent years. Although any answer to this question depends in part on values, it also depends on facts—facts that address such questions as: How well do public and private schools work for children? Do they work differentially well for different types of children? Are private schools divisive, and, if so, along what lines? Are private schools more efficiently managed than public schools, and, if so, why?

Recent policy discussions concerning private schools in the United States have included both proposals that would increase their role in American education and proposals that would decrease their role. On the increase side, there have been proposals for tuition tax credits for private schools, and a bill to provide such credits was narrowly defeated in Congress. At the state level, proposals for educational vouchers have been discussed, and in California an attempt to get such a proposal on the ballot for referendum was made recently. On the decrease side, the Internal Revenue Service recently proposed that a racial composition requirement, more restrictive than that imposed on most public schools, be a criterion for maintaining tax-exempt status. This is one of a series of attempted policy interventions to constrain the use of private schools by whites escaping a mandatory integration program in the public schools.

These conflicting policy efforts are all based on certain assumptions about the role of private and public schools in the United States. Examining the assumptions, and showing the falsity of those that are not correct, will not in itself resolve the policy questions concerning the roles of public and private education in America. Those policy questions include certain value premises as well, such as the relative roles of the state and the family in controlling a child's education. This examination will, however, strengthen the factual base on which the policy conflicts are fought. To aid in doing this is the aim of this report.

It is useful to begin the process by examining some of the most widely held premises underlying policy proposals that would affect the role of private education in the United States. It is these premises, not the policy proposals, for which research like this can provide information.

Premises underlying policies that would increase the role of private schools:

1. Private schools produce better cognitive outcomes than do public schools with comparable students.
2. Private schools provide better character and personality development than do public schools.
3. Private schools provide a safer, more disciplined, and more ordered environment than do public schools.[1]

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[1] Some authors go so far as to argue that private schools reduce

4. Private schools are more successful in creating an interest in learning than are public schools.

5. Private schools encourage interest in higher education and lead more of their students to attend college than do public schools with comparable students.

6. Private schools are more efficient than public schools, accomplishing their educational task at lower cost.

7. Private schools are smaller, and thus bring about greater degrees of participation in sports and other activities than do public schools.

8. Private schools have smaller class sizes, and thus allow teachers and students to have greater contact.

Premises underlying policies that would decrease the role of private schools:

1. Private schools are socially divisive along income lines, skimming the students from higher income backgrounds and segregating them in elite schools.

2. Private schools are divisive along religious lines, segregating religious groups in separate schools.

3. Private schools are divisive along racial lines, in two ways: they contain few blacks or other minorities, and thus segregate whites in private schools from blacks in public schools; and the private sector itself is more racially segregated than the public sector.

4. Private schools do not provide the educational range that public schools do, especially in vocational and other nontraditional courses or programs.

5. Private schools have a narrower range of extracurricular activities, and thus deprive their students of participation in school activities outside the classroom.

6. Private schools are unhealthily competitive, and thus public schools provide a healthier affective development.

7. Facilitating the use of private schools aids whites more than blacks and those better off financially at the expense of those worse off; as a result, it increases racial and economic segregation.

Some of these premises underlying school policies are held by policy-makers whose decisions affect the relative roles of private and

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crime, through reducing either in-school crime (a significant portion of teen-age crime) or out-of-school crime (see West 1980 and Lott and Fremling 1980).

public schools in America, and some are held by parents who choose between private and public schools for their children. Thus, information on the correctness of these premises is useful not only for educational policy-making in a nation, state, or city, but also for parental choice. Parents have a good deal of direct information on some of the questions implicit in these premises (such as the level of discipline imposed in the public and private schools in their locale), but almost no information on others.

The current study, at its present stage, can provide better information on some of these questions than on others, because different questions require information about different aspects of schools. Some of the questions concern the effects of schools on students within them. Premises 1, 2, 4, and 5 from the first list and number 6 from the second list raise questions of this sort. These questions are the most difficult to answer, because the experimental design implicit in most of these questions (the same child in a public school or a private school would develop differently) is not possible in practice. Consequently, statistical analyses must be substituted for an experimental design, and such analyses are always subject to problems of inference. If data from more than one point in a child's school career are available, the statistical analysis is more powerful, and some of the problems of inference are eliminated. Such data do not now exist in this study, although they will be available for the sophomores in two years. For the present, substitute statistical techniques are used, some of which make use of the fact that information is available on two cohorts. These statistical techniques will be discussed at appropriate points.

A second set of the questions requires information on the distribution of students among schools. Premises 1, 2, and 3 from the second list are of this sort. Obtaining such information is much less problematic than obtaining information on effects of schools. It is directly available for the sample of schools and sample of students in the study. The only inferential problem is estimation of the characteristics of all U.S. schools from those of the sample. Because these samples were drawn with known probabilities from the universe of U.S. schools of different types, this estimation can be carried out without difficulty.

There is, however, sometimes a question of another type lurking behind those of simple student distribution: What effect would a policy that increased or decreased the number of students in private schools have on the distribution of students? For example, the question might be raised: What would be the effect of tuition tax credits on racial segregation in the schools? Premise number 7 in the second list raises a question of this sort.

The answers to this kind of underlying question are not so directly accessible as the answer to the simple question of the current distribution of students. There are additional problems of inference involved, which means that these questions can be answered with less certainty than the questions about current distribution.[1]

A third type of question involves comparing characteristics of the public and private schools themselves. These characteristics include both the resources of public and private schools and what goes on in the schools. Premises 3, 6, 7 and 8 from the first list and 4 and 5 from the second are related to such questions. Information about school resources and about what goes on in the schools was reported at various points in the school and student questionnaires, and, like the information on distribution of students among the schools, is inferred for U.S. schools as a whole simply by the inference from sample to universe.

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[1] An illustration of the difficulty of answering such questions conclusively is provided by recent and continuing conflicts over the anticipated effect of particular types of court desegregation decisions on white flight, and thus on the resulting degree of racial segregation in the schools.

These distinct sets of questions lend themselves nicely to structuring a report designed to provide a broad overview of public and private schools. Answers to these questions can be grouped into four major divisions: the student composition of public and private schools, the resources that go into public and private schools, the functioning of public and private schools, and the outcomes of public and private schooling. Or, put more simply, Who is in the schools? What resources go into them? What goes on? and What comes out? These four divisions, prefaced by a section on the geographic and size distribution of public and private schools, constitute four of the five analytic chapters of this report, chapters 3 through 6. Chapter 7, taking as its starting point differences in what comes out of schools in the different sectors, asks why? A concluding chapter, 8, examines the premises outlined here in the light of the findings of the analyses.

The Distinction Between Research Results and Policy Consequences

Although the questions examined in this report are designed to be relevant to policy, it is important to recognize that research results do not translate directly into predictions about policy consequences. For policies with complex and indirect consequences, such as those involving private schools, this point is especially important. There are a number of illustrations in this report. One has to do with the differential effectiveness of public and private schools for particular outcomes, for comparable students. Consider the outcome of achievement in the basic cognitive skills of reading, vocabulary, and mathematics, treated in chapter 6. Suppose the research result is that the average Catholic school (a category that is useful for illustration, since it is the only homogeneous group of schools in the private sector that is large enough to be treated separately in the analysis) is more effective for the student from an average background than is the average public school. Let us assume that the problems of differential selection into the Catholic schools that make such an inference hard to establish have been overcome. What then are the discontinuities between the research result and any action? Several different levels of action, and several differnt sources of discontinuity may be imagined:

1. A parent, deciding whether to send a child to Catholic or public school.

First, such a decision is ordinarily based on a rather broad range of outcomes of schooling, and we have examined only a subset of them. But even if the parent were interested only in those consequences examined here, there is anouther problem. The parent is not interested in the average Catholic school as compared to the average public school, but the particular Catholic school and public school which are the concrete alternatives. And the parent is not interested in how the schools function for the average student, but for a particular student, a given son or daughter.

Clearly for such action, the illustrative result is not of great value. What would be of greater value is a result of much more complexity, a kind of three-dimensional matrix, showing how outcomes in particular kinds of Catholic schools compare to those in particular kinds of public schools for particular kinds of students. (A start toward the latter is provided in table 6.2.6 and the accompanying text.)

2. A legislature, deciding whether to provide educational vouchers usable for public or private schools.

Again, these are many different outcomes of such a policy that may be relevant to the decisions, beyond the narrow cognitive skills referred to in this illustrative result. Apart from this, however, there are several other serious discontinuities. First, the greater effectiveness of the Catholic schools for a given student may be due not directly to school policies, but instead to the reinforcement provided by a particular student body composition. If this were so, then the introduction of a new set of students would dilute or eliminate the source of the effects.

Second, the greater effectiveness may be due to characteristics of the school staff which are in limited supply, and not to be found in the new schools that open to serve the expanded demand for Catholic schools. If this were so, there would be no increased achievement as a result of the policy.

Third, the greater effectiveness might be due to the greater commitment on the part of student or parent or both when the parent is paying tuition for the child to attend school. If this were so, then the introduction of vouchers, which eliminated payment even by those who currently use the Catholic school, would not only fail to bring about an increase in achievement of the new entrants, but would eliminate the source of the greater achievement for existing students in these schools.

Fourth, the new policy might be accompanied by greater federal intervention in and regulation of schools in the private sector, introducing the same constraints on their authority that currently exist for public schools. If this were so, and if the greater effectiveness were due to the lesser constraints on authority enjoyed by schools in the private sector, then the new policy would eliminate the source of that greater effectiveness.

There are, of course, processes through which the greater effectiveness might occur which would be unaffected by the policy, such as greater commitment to a school attended by choice, or a distinctive educational philosophy of the Catholic schools which would be found in the new school as well. What is important to recognize, however, is that a new policy does not merely extend the educational programs already in existence to a larger group. It changes a number of conditions, and some of those conditions might be important to any differential effectiveness of the programs. Research may be able to discover something about the mechanisms through which this differential effectiveness occurs, and if so, can be more informative about the possible effects of a new policy. But what is important to recognize is that the matter is not so simple as extrapolating a given effect to a broader set of students through introduction of a new poliocy.

Classification of Schools

A word is necessary on the classification of schools used in the report. For much of the analysis, schools are classified not into two sectors, but into three--public, Catholic, and other private schools. This is done because Catholic schools constitute by far the largest single group of private schools and constitute a less diverse array of schools than all private schools taken together. It would be useful to make various subdivisions among the other private schools, separating out the different religious subgroups and distinguishing the nonreligious schools according to some criterion, but that is outside the scope of this report. In further work with these data, carried out either by us or other analysts, some such distinctions will be possible, in part because two special samples of schools were drawn: Catholic schools that had high proportions (30 percent or more) of black students in them, selected in addition to the representative sample of Catholic schools; and a special sample of "high-performance" private schools--the eleven private schools with the highest proportions of their graduating student bodies listed as semi-finalists in the 1978 National Merit Scholarship competition.[1]

In chapters 3 and 7 and part of chapter 6 only the three sectors, public, Catholic, and other private, are compared. However, in chapters 4, 5, and 6 (section 6.1), two additional sets of schools are included in comparison. These are the eleven high-performance private schools mentioned previously and a set of twelve high-performance public schools.[2] These schools are included to provide extremes that can better illuminate some of the research questions posed in the report. Because of the way they were drawn, these schools do not represent any other than themselves; thus they are not "sectors" like the public, Catholic, and other private sectors.[3]

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[1] A second criterion in selecting these schools was that no two schools would be drawn from the same state. Only one schools was eliminated by this criterion. There is a submerged stratification in this mode of selection, since different norms for the National Merit Scholarship tests are used in different states. The eleven schools selected by this procedure do show broad geographic distribution. One of the eleven schools is Catholic, the other ten are non-Catholic.

[2] The twelve high-performance public schools were selected in exactly the same way as the eleven high-performance private schools, except that they were chosen from the sample of 894 public schools after the sample was drawn and data collected. Because they were not drawn from the total population of U.S. public schools, whereas the high-performance private schools were drawn from the more than 6,000 private schools in the country, the high-performance public schools are a somewhat less select set.

[3] When the high-performance private schools are separated out from the two major private sectors, the results for those sectors, which are always reported in weighted form, are hardly affected by the loss, since the weights of the high-performance private schools, when part of the private school sample, are very small. With the exception of chapter 3, the tabulations and analyses for the Catholic and other private sectors presented in this report do not include the specially sampled high-performance private schools, which, as explained, affects the results for those sectors very little. The high-performance public schools are, however, included as part of the public sector in all tabulations and analyses, since they were drawn in the sample to represent particular strata including other high schools. To be consistent, the private school sectors should have included the high-performance private schools; and the separate tabulations for the high-performance public schools should not include in their weights any weight for schools other than themselves. As pointed out, however, that would hardly affect results obtained in this report.

Further, the results reported for these high-performance private and public schools cannot be generalized to a larger population of schools of students, but they do suggest something about the character of schools that produce high-achieving students.[1]

The Sample of Schools, and Reference to a Broader Population of Schools.[2]

The schools sampled for this study were drawn from what is perhaps the most complete listing of American public and private high schools in existence (the listing is described at the beginning of the next chapter). Even that listing, however, is incomplete, especially for the heterogenous category of private, non-Catholic schools. New schools in this sector come into existence with some frequency; and there are existing schools too small to be located or too independent to be willing to be included on any listing, even nongovernmental. Thus, it is necessary to realize that this category of schools is not closed and well defined, but is both heterogeneous and amorphous, from large, well-endowed preparatory schools to a long tail which includes free schools with a few students in casual attendance. There are schools in this long tail which were not included in the list from which the sample was drawn; and even if they had been, the heterogeneity and amorphousness of the category makes it difficult to gain a sense of the population of other private schools for which the sample was drawn as representative. In this study, as with all surveys, the sample available for analysis is not the same as the sample as drawn. In part, this is because listings are inaccurate, a fact which is discovered only at the time the data are to be collected. In the sample for this study, there were some listings which were in error: a school was no longer in existence or not properly a high school within the definition of the population of schools. These were replaced by resampling within the stratum for which a sample allocation had been made.

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[1] This probably constitutes a deficiency in the sample design in selection of the high-performance private schools. If the sample were being drawn again, we would prefer to see two subgroups like these, but representative of some identifiable segments of American private and public schools.

[2] A sample design report for the High School and Beyond Study as a whole can be obtained from the National Center for Education Statistics.

In addition to replacement due to inaccurate listing, there are refusals. In this study, refusals could occur at the school level (due to a refusal of either the school district or the school), or the student level. Substitution of a school within the same substratum was carried out for schools which refused; but no substitution was made for student refusals or student unavailability due to continued absence. The sample of schools, and students, distinguished according to public, Catholic, and other private sectors (each of which constituted strata for which sample allocations were made in the sample design), is given in table 1.1. Overall, 71 percent of the schools initially drawn which were eligible participated in the survey. But this rate ranged from a high of 79 percent in the Catholic schools to a low of 50 percent in the other private schools. The final realized sample size was 91 percent of the size of the final list of eligible schools, as shown in row 7 of table 1.1, but this includes some schools that are substitutes.

Within the schools, the student response rate for the questionnaire overall was 84 percent, a rate which ranged from a high of 93 percent for the Catholic sector to a low of 83 percent for the public sector. Most of the student nonresponse, 72 percent of the total nonresponse of 11,440 was due to continued absence, with only 18 percent due to refusals. Overall, refusals represent 3 percent of the total sample.

TABLE 1.1

SAMPLE OF SCHOOLS AS DRAWN CORRECTED THROUGH REPLACEMENT AND AS REALIZED, AND SAMPLES AS DRAWN AND AS REALIZED

Number	Total	Public	Catholic	Other Private	
				Regular	H.P.
1. Total numbers of schools represented by sample .. .	20,316	15,766	1,571	26,966	12
2. Initial sample size number of eligible schools	1,122	984	88	38	12
3. Number of eligible schools	1,019	893	86	28	12
4. Number of eligibles after replacing ineligibles	1,118	982	88	36	12
5. Final realized sample size	1,015	893	84	27	11
School Response Rates					
6. Among initial eligible schools (row 3)	.71	.70	.79	.50	.75
7. Final rate neglecting substitution (row 5/ row 4)	.91	.91	.95	.75	.92
Number of Students[a]					
8. Total eligible students ..	70,170	62,027	5,965	1,387	791
9. Sophomores eligible in final school sample	35,338	31,241	2,975	727	395
10. Seniors eligible in final school sample	34,832	30,786	2,990	660	396
11. Sophomores in final sample	30,280	26,448	2,831	631	370
12. Seniors in final sample	28,450	24,891	2,697	551	311
Student Response Rates					
13. Sophomores (row 11/ row 9)	.86	.85	.95	.87	.94
14. Seniors (row 12/row 10) ..	.82	.81	.90	.83	.79

[a] Sample size reported here is slightly greater than that found in other reports based on the 1980 High School and Beyond data. This is due to the fact that this report includes a subset of non-sample twins.

In the analysis throughout chapters 3 to 7, the results reported describe exactly the sample of schools and students. It is in the generalization from this sample to the population of students (or schools) in a given sector that problems of imprecision or bias arise. Generalization to the sector as a whole, of course, is where the interest lies, rather than in the sample *per se*.

All of the changes in the sample between initial design and final realized sample, with the exception of replacements due to incorrect listing, are potential sources of bias in the representativeness of the sample. Without information on the schools, and students who were in the intended sample but not in the realized sample, the effect of this potential bias is unknown.

The sampling problems for the other private schools are particularly severe. Generalizations from the other private sample can only be made with considerable uncertainty, for two reasons. The first is sample size. The number of schools in the sample is only 27, and the number of students in the sample is only 631 sophomores and 551 seniors, by far the smallest numbers of schools and students in any of the three sectors. The effect of this small sample size on sampling error, and thus on generalizations about the other private schools, can be estimated. We will turn to that in the next section.

The other source of problems with the other private school sample is that the potential bias is greatest there. The fraction of original schools participating (before substitution) was smaller than in any other school. Of the 28 eligible schools in the original sample only 14 participated, giving a 50 percent rate, while the next lowest was 70 percent in the public sector.

Because of the potential bias, and to a lesser extent because of the small sample size (lesser because the effect of sample size is simply in variability of estimates, and that effect can be estimated, while the effect of potential bias is unknown), generalizations from the other private schools in the sample to the other private sector as a whole should be quite tentative. Comparisons between the Catholic sector and the public sector are on much stronger ground because sampling variability is less and potential bias due to nonresponse of schools is less in both these sectors.

We have attempted to exercise special caution in making generalizations about other private schools throughout this report. However, the reader should keep in mind the present discussion at each point in the analysis.

The sample size deficiencies in the private sector are due to the design of High School and Beyond as a multipurpose study. The nonresponse deficiencies in the other private sector are largely due to the extreme heterogeneity of schools in this sector, which in any case reduces the meaningfulness of any generalizations about "non-Catholic private schools" as a whole.

Sampling Errors

The descriptive statistics in chapters 4 and 5, and in parts of 3 and 6, ordinarily consist of comparisons of percentages in a given response category in each sector. Standard errors of these percentages, for indicating the precison of the reported percentge as an estimate of the percentage in the sector as a whole, are not given. Instead, approximate standard errors that can be applied to these tables are shown in the appendix table A.1.2. That table shows, for example, that if the reported percentage for sophomores is around 50 percent in a given sector, the standard error for that percentge is about .5 percent in the public sector, 1.8 percent in the Catholic sector, 5.2 percent in the other private sector, 4.2 percent in the high-performance public sector, and

6.2 percent in the high-performance private sector. The large standard errors in some sectors are due to the smaller sample sizes, and in the case of the other private sector, the heterogeneity of the sector.[1]

Because of the disparities in standard errors in the three major sectors, a rough rule of thumb may be used for standard errors of differences between sectors: the standard error of the difference is approximately the size of the larger standard error of the two sectors being compared. The much higher standard error for the other private sector shows the imprecision of the estimates in that sector as estimates of the student population percentage in that sector. This is one source of uncertainty about generalizations to the population of students in non-Catholic private schools. The other, of course, is potential bias, referred to earlier.

Most of chapter 6 and chapter 7 consist of analytical questions concerning the differential effects of schooling in the three sectors. The comparisons in these cases are based on numbers derived from complex statistics, such as regression coefficients or some transformation of them. Standard errors have been calculated and are reported for these numbers, because table A.1.2 cannot be used in these cases, and because causal inferences depend on the comparisons made in these sections.[2]

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[1] The effect of heterogeneity of the other private sector also appears in the standard error estimates for the high-performance private sector, since the "sample design effect" correction factors calculated for the other private sector are used for the high-performance private sector. If a separate correction factor had been calculated for the latter sector, it would probably have been much smaller. Thus the standard error estimates for the high-performance private sector are probably somewhat high.

[2] Sample design effect correction factors discussed in the preceding footnote have not been incorporated into these standard errors because of previous work indicating that for complex statistics such as multiple regression coefficients, the design effect is close to 1.0 (Kish and Frankel, 1974). For table 6.2.1 only, standard errors were empirically estimated and then compared with those estimated using standard procedures. Appendix A.1.5 shows this comparison and suggests that for the Catholic sector the average design effect is 1.5 and in the other private, it is approximately 3.

CHAPTER 2

THE SIZE AND GEOGRAPHIC DISTRIBUTION OF PUBLIC AND PRIVATE SECONDARY SCHOOLS

This chapter provides an overview of the distribution of public and private education in the United States, emphasizing how private education is distributed geographically and a few general characteristics of interest. These tabulations, unlike those in the remaining chapters of the report, are based on data for all schools in the United States. The data are from the NORC 1978 school universe tape, which was developed and compiled from several different sources.[1]

As observers have often noted, the diversity within the domain of private education is in many respects greater than the differences between public and private education in general. This diversity should of course not be lost sight of, but neither should it obscure the fact that for some purposes it is necessary to consider the private sector of American secondary education as a whole. This is particularly the case as private schools become increasingly implicated in government policies in education. Policies at the Federal and state levels that explicitly relate to private education are a relatively recent phenomenon, and information that can aid these policies is only slowly coming into existence.

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[1] The NORC school universe file was created from the following sources:

a) A school universe file for fall 1978, prepared by the Curriculum Information Center, Denver, Colorado, a private organization
b) A public school universe file for Fall 1978 constructed by the National Center for Education Statistics from the Fall 1978 Survey of Public Schools
c) A private school universe file for fall 1978 prepared under contract to the National Center for Education Statistics
d) A supplementary U.S. Civil Rights Commission file of a large sample of public schools in the United States, fall 1976

Because file (a) was the most complete file, grade spans and enrollments were used from that file if the school was on that file. Files b, c, and d were used to augment this file.

Because of the different source material, total numbers of schools and total enrollment differ slightly from those published in the 1978 Fall Enrollment Survey for public schools, and from the NCES Bulletin 80-B01 for private schools. No correction has been made for the change in cohort size between 1978 and 1979.

The Curriculum Information Center file contained no information on type of private school beyond the Catholic vs. non-Catholic classification. Consequently, in some tables of this chapter, a "private, non-Catholic unclassified category will be shown, consisting of the non-Catholic schools that did not appear in the NCES private school universe file.

To provide a general understanding of private schools while retaining a part of the diversity that is present among them, most of the analyses in this report treat private education in two broad sectors--Catholic and non-Catholic (or "other private," as the latter are termed). (These two are augmented by a third set, a group of specially selected high-performance schools referred to in chapter 1.) In this chapter, however, there is an effort to present some of the diversity that is lost with this dichotomization of private schools. In the next section, the classification of school types is expanded to include a breakdown of the "other private" category into "religious-affiliated" and "non-religious-affiliated" for comparision of public and private schools along geographic and enrollment lines. Then, in the second part of this chapter, where the focus shifts to selected characteristics of private secondary schools, additional distinctions within the religious-affiliated category are introduced to indicate some of the variability to be found there.

2.1 Enrollment and Geographic Comparisions of Public and Private Secondary Education

Table 2.1.1 shows the number of schools and estimated[1] student enrollments at the secondary level for public schools and various kinds of private schools. Of most interest in this table are the numerical division of American high school students between public and private schools (about 90/10 public/private, with two-thirds of the students in private schools found in Catholic schools) and the sizes of schools in each sector. As is shown in the sixth row of table 2.1.1, which contains the average high school enrollments in the different sectors, private secondary schooling tends on the average to be carried out in much smaller schools than does public schooling. It should be noted that the estimates of the number of high school students (grades 9 through 12) in each sector are not directly comparable to the enrollment figures that most commonly appear in this sort of tabulation. Those tabulations usually give the number of students enrolled in schools that offer secondary-level programs. As the number of grades in the average school of each sector (row 3 of table 2.1.1) shows, these two enrollment estimates are likely to differ considerably: the average number of grades in private schools with secondary-level programs is appreciably higher than that in public schools. This, of course, points to yet another

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[1] Since enrollment figures for the schools are only available for all grades in the school, the figures given here (and in the rest of this section) for grades 9 through 12 are estimates that may be subject to some error. The enrollment figures are computed by, first, obtaining the average number of students per grade (each school's total enrollment divided by the total number of grades in the school) and, second, by multiplying this average by the number of high-school-level grades that the particular school has. For schools that have only high-school grades, this of course equals the total enrollment.

TABLE 2.1.1

NATIONAL FIGURES FOR NUMBER OF SCHOOLS AND ESTIMATED ENROLLMENTS IN GRADES 9-12 IN PUBLIC AND PRIVATE EDUCATION, 1978-79 SCHOOL YEAR[a]

	U.S. Total	Public	Private				
			Total	Catholic	Other Religious Affiliation	Private with no Affiliation	Private Non-Catholic[b]
Secondary-level schools:							
Total number with secondary-level grades (9-12)[c]	24,132	17,822	6,310	1,861	1,552	2,296	601
Percent of total	100.0	73.9	26.1	7.7	6.4	9.5	2.5
Mean number of grades	6.0	4.9	9.2	5.1	10.9	11.2	10.1
Student enrollment:							
Estimated total number enrolled in grades 9-12 (000s)	14,866.4	13,508.4	1,359.0	900.8	168.6	223.8	64.8
Percent of total enrollment in grades 9-12	100.1	90.9	9.1	6.1	1.1	1.5	0.4
Mean enrollment per school in grades 9-12	616	758	215	484	109	97	108

SOURCE: NORC School Universe Tape.

NOTE: Details may not add to totals because of rounding.

[a] Schools with total enrollments of less than 25 students for all grade levels are excluded from these and all subsequent tabulations in this section.

[b] These non-Catholic private schools were on the CIC universe file but not the NCES file. Consequently, no information about affiliation exists beyond the fact that they are not Catholic schools.

[c] The number of schools listed has not been corrected on the basis of information obtained through the High School and Beyond sample. In the original sample of 1,122 schools, 103 were found that were not properly high schools having their own enrollment. (For example, many area vocational schools do not have students enrolled for graduation within them, but instead serve students from other schools, providing the vocational part of their program.) A new estimate was made of the size of the school universe when the schools represented by these schools were eliminated. This estimate gives 21,700 schools rather than 24,132.

sort of diversity, not discussed here, that research might examine--the differences in the age ranges of the average public and private school student's schoolmates.

Turning to geographic distributions, table 2.1.2 indicates that there is wide variability across regions in the percentage of high school students in private schools, ranging from 4.4 percent in the Mountain states and 5.4 percent in the West South Central region to 13 percent or more in New England and the Middle Atlantic states. The relative shares of the different types of private schools also show some striking differences over this level of aggregation. The Catholic share of American secondary education ranges from a high of 10 percent in the Middle Atlantic region to a low of 2 percent in the Mountain region.

The variability among states is of course more pronounced, as shown in table 2.1.3. Private education is strongest in Connecticut, where it enrolls nearly 17 percent of all high school students; Wyoming, at the other extreme, has only slightly over 1.5 percent of its students in private schools.

Within the private sector, the Catholic schools are with few exceptions strongest in the New England and Middle Atlantic states. Their share falls off dramatically, to under 1 percent, in the Carolinas and in a few of the Western states. Other religious affiliations are generally strongest through the southern Atlantic seaboard, in Tennessee, and in the Midwestern states of Michigan, Wisconsin, and Iowa.

Another distributional breakdown of interest concerns the locations of schools and students in urban, suburban, and rural localiies. Table 2.1.4 gives the percentages of the constituent schools of each of the five school types and the estimated high school enrollments in each of these settings.

TABLE 2.1.2

ESTIMATED PERCENTAGE DISTRIBUTION OF STUDENTS IN GRADES 9-12 IN PUBLIC AND PRIVATE SCHOOLS FOR EACH OF THE NINE CENSUS REGIONS: 1978-79 SCHOOL YEARS

Region	Total enrollment		Public	Private				
	Number (000s)	Percent		Total[a]	Catholic	Other Religious Affiliation	Private with no Affiliation	Private Non-Catholic
United States total ...	14,866	100.0	90.9	9.1	6.1	1.1	1.5	0.4
New England	876	100.0	86.2	13.8	8.1	0.7	4.7	0.4
Middle Atlantic	2,650	100.0	87.0	13.0	10.3	1.2	1.2	0.3
South Atlantic	2,201	100.0	91.9	8.1	3.3	1.6	2.6	0.6
East South Central ..	959	100.0	91.9	8.1	2.8	1.7	2.9	0.8
West South Central ..	1,427	100.0	94.6	5.4	3.5	0.7	0.9	0.3
East North Central ..	3,004	100.0	90.7	9.3	7.4	1.1	0.6	0.3
West North Central ..	1,180	100.0	91.1	8.9	6.9	1.1	0.5	0.4
Mountain	682	100.0	95.6	4.4	2.3	0.6	0.9	0.6
Pacific	1,888	100.0	92.4	7.6	4.7	1.1	1.2	0.5

SOURCE: NORC School Universe Tape.

[a] Details in private sector may not add to totals because of rounding.

TABLE 2.1.3

ESTIMATED PERCENTAGE DISTRIBUTION OF STUDENTS IN GRADES 9-12 IN PUBLIC AND PRIVATE SCHOOLS BY STATE: 1978-79 SCHOOL YEAR

Region and State	Total enrollment		Public	Private			
	Number (000s)	Percent		Catholic	Other Religious Affiliation	Private with no Affiliation	Private Non-Catholic
New England							
Connecticut	230.3	100.0	83.1	9.0	0.9	6.2	0.8
Massachusetts	409.5	100.0	86.9	9.3	0.3	3.4	0.2
Maine	81.8	100.0	90.2	1.7	0.7	6.9	0.5
New Hampshire	60.2	100.0	88.0	4.1	2.3	5.5	0.1
Rhode Island	59.2	100.0	85.5	12.0	1.3	1.2	0.0
Vermont	35.3	100.0	87.0	4.1	0.2	8.8	0.0
Middle Atlantic							
New Jersey	550.9	100.0	88.6	9.6	.6	1.1	0.1
New York	1,212.8	100.0	86.5	10.1	1.8	1.2	0.4
Pennsylvania	886.3	100.0	86.6	11.0	0.8	1.2	0.4
South Atlantic							
Washington, D.C.	37.1	100.0	79.9	14.1	2.2	3.2	0.5
Delaware	46.7	100.0	85.6	10.6	1.3	2.3	0.2
Florida	489.1	100.0	89.4	4.2	2.4	3.3	0.8
Georgia	343.4	100.0	93.7	1.0	1.4	3.5	0.5
Maryland	268.9	100.0	86.5	9.2	1.6	1.7	0.9
North Carolina	328.4	100.0	95.3	0.5	1.2	2.4	0.7
South Carolina	223.0	100.0	94.0	0.8	1.5	3.2	0.5
Virginia	345.0	100.0	93.5	2.0	1.5	2.3	0.8
West Virginia	118.9	100.0	97.0	2.1	0.5	0.4	0.1
East South Central							
Alabama	268.5	100.0	93.7	1.1	1.5	3.1	0.5
Kentucky	255.0	100.0	91.6	6.4	0.6	1.1	0.3
Mississippi	164.7	100.0	90.6	1.5	0.8	5.0	2.1
Tennessee	270.6	100.0	91.0	2.0	3.3	3.0	0.7

TABLE 2.1.3--Continued

Region and State	Total enrollment		Public	Private			
	Number (000s)	Percent		Catholic	Other Religious Affiliation	Private with no Affiliation	Private Non-Catholic
West South Central							
Arkansas	133.2	100.0	96.3	1.6	0.6	1.1	0.5
Louisiana	270.8	100.0	85.4	10.3	0.8	2.5	0.9
Oklahoma	190.2	100.0	97.8	1.1	0.6	0.3	0.2
Texas	833.2	100.0	96.6	2.1	0.6	0.5	0.1
East North Central							
Illinois	809.9	100.0	88.2	10.1	0.8	0.7	0.2
Indiana	377.7	100.0	93.7	4.2	0.9	0.7	0.6
Michigan	666.8	100.0	91.5	5.9	2.0	0.5	0.2
Ohio	815.7	100.0	91.3	7.7	0.5	0.5	0.1
Wisconsin	333.6	100.0	90.4	6.8	1.8	0.5	0.5
West North Central							
Iowa	194.2	100.0	89.0	8.2	2.6	0.0	0.3
Kansas	143.5	100.0	93.3	4.9	0.3	0.6	0.9
Minnesota	306.2	100.0	93.4	4.8	1.1	0.5	0.2
Missouri	337.1	100.0	89.5	8.5	0.7	0.9	0.4
North Dakota	49.2	100.0	94.3	5.3	0.3	0.1	0.0
Nebraska	98.2	100.0	88.2	10.5	0.5	0.3	0.5
South Dakota	51.2	100.0	91.9	4.7	1.0	0.9	1.6
Mountain							
Arizona	168.2	100.0	95.2	2.6	0.4	1.2	0.6
Colorado	174.6	100.0	95.0	2.5	1.0	1.1	0.4
Idaho	51.4	100.0	97.7	0.9	0.4	0.4	0.6
Montana	54.9	100.0	93.9	4.3	0.5	0.9	0.5
New Mexico	85.2	100.0	94.3	1.9	0.9	1.5	1.4
Nevada	40.6	100.0	96.5	3.1	0.2	0.1	0.0
Utah	82.4	100.0	97.5	1.1	0.3	0.2	1.0
Wyoming	24.8	100.0	98.5	0.6	0.0	0.9	0.0

TABLE 2.1.3--Continued

Region and State	Total enrollment		Public	Private			
	Number (000s)	Percent		Catholic	Other Religious Affiliation	Private with no Affiliation	Private Non-Catholic
Pacific							
Alaska	27.9	100.0	97.2	0.9	2.0	0.0	0.0
California	1,425.3	100.0	92.0	5.2	1.0	1.3	0.5
Hawaii	59.0	100.0	85.0	6.7	4.0	3.4	0.9
Oregon	145.2	100.0	95.3	3.0	0.6	0.5	0.6
Washington	230.6	100.0	94.5	3.1	1.2	0.6	0.6

SOURCE: NORC School Universe Tape.

NOTE: Details may not add to totals because of rounding.

[a] Approximations derived from information on the schools' enrollments, the number of secondary-level grades, and the total number of grades in each school.

TABLE 2.1.4

PERCENTAGE DISTRIBUTION FOR SCHOOLS AND ESTIMATED ENROLLMENTS (GRADES 9-12) IN URBAN, SUBURBAN, AND RURAL COMMUNITIES[a] BY SCHOOL SECTOR: 1978-79 SCHOOL YEAR

	U.S. Total	Public	Private				
			Total	Catholic	Other Religious Affiliation	Private with no Affiliation	Private Non-Catholic
Total number:							
Schools	24,131	17,822	6,309	1,860	1,552	2,296	601
Students (000s)	14,863.0	13,505.1	1,357.9	900.7	168.6	223.8	64.8
Schools:							
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Urban	15.9	11.5	28.2	22.0	26.7	35.6	22.5
Suburban	36.1	33.9	42.1	60.6	34.5	33.4	38.1
Rural	48.1	54.6	29.7	17.4	38.8	31.0	31.4
Students:							
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Urban	22.4	22.5	22.2	20.2	30.8	24.5	19.9
Suburban	47.9	46.7	60.0	68.6	45.7	42.3	38.6
Rural	29.7	30.9	17.8	11.3	23.5	33.2	41.5

SOURCE: NORC School Universe Tape, 1979.

[a] The urban, suburban, and rural classifications are the standard U.S. Bureau of the Census definitions. "Urban": the school is located in a central city (population of 50,000 or more) of a Standard Metropolitan Statistical Area (SMSA); "suburban": the school is located in an SMSA, but is not in a central city; "rural": the school is not located within an SMSA. Bureau of the Census information was not available for a small number of school localities. For these, the school was classified as urban if the population of its locality is 50,000 or more, as suburban if the population is greater than 2,499 and less than 50,000, and as rural if the population is under 2,500.

It is apparent that the public and private sectors are distributed quite differently across these categories, in both schools and enrollments. Comparing public and private schools overall (columns 2 and 3), private schools tend to be substantially more concentrated in urban and surburban areas than do public schools,[1] the majority of which are rural-based. (Of course, as the list from the table shows, a far smaller percentage of students are in rural schools.) Within the private sector, the schools with no religious affiliation are more likely to be urban than the other types. Catholic schools are heavily concentrated in suburban communities and relatively rare in rural areas.

For overall public and private sector enrollments (columns 2 and 3), the differences are found in the suburban and rural areas. Owing largely to the high Catholic enrollments in the suburbs (68.6 percent of the Catholic high school students), the private sector is well above the national suburban average (column 1). When this finding is coupled with the fact that private education enrolls slightly below the national average in urban communities, a pattern somewhat contrary to expectation emerges. Research on Catholic education frequently assumes that Catholic enrollments are concentrated in urban areas (see

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[1] The pattern of enrollments that table 2.4 shows differs somewhat from the results obtained by a recent survey of private high schools conducted by the National Institute of Education (NIE) in conjunction with the National Association of Secondary School Principals and the Council for American Private Education. A volume of articles based on that survey estimates that 16 percent of all private high schools are in urban areas and 70 percent are in suburban communities. While these estimates are quite close to figures presented in table 2.4 for the Catholic sector, the suburban percentage is much higher than our figure of 42 percent for private schools as a whole. The discrepancies between the two data sets are attributable in large part to a narrower definition of the non-Catholic private school universe employed by the NIE survey (Abramowitz and Stackhouse 1980, p. 13).

Erickson 1978, p. 90). Furthermore, the suburban public schools are commonly believed to be of such quality that private schools are comparatively less distinctive and thus less attractive there. Over against these notions, table 2.1.4 shows that the private sector enrolls no greater a proportion of its students in the cities than the public sector does of its students, and that private education appears to be at its competitive strongest in the suburbs.[1]

2.2 Selected Attributes of Private Secondary Schools

While the analyses presented in this report are carried out on private secondary education as a relatively undifferentiated whole vis-à-vis public secondary education, further research is clearly needed on the numerous lines of diversity within the private sector. The most important distinctions that can be drawn here appear to be between the religious- and non-religious-affiliated categories and, within the religious-affiliated category, among the schools of the various faiths. This section briefly examines a few of the more striking differences found in the structural arrangements of some of these principal divisions within private education.

Table 2.2.1 gives the numbers of schools and secondary enrollments for the non-religious-affiliated and the five largest religious-affiliated categories. Although the numbers of schools in the two categories are

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[1] In addition to tabulating the distributions of private schools by the Census urbanization variable categories in the present study, the NIE survey also asked school principals to classify the type of area served by their schools. Of the Catholic school principals surveyed, 58 percent described their areas as urban, while only a quarter said they served a suburban area (Abramowitz and Stackhouse 1980, p. 51). The discrepancies between the two surveys on this point lead us to regard the results presented in table 2.4 as tentative.

TABLE 2.2.1

SELECTED PRIVATE SCHOOL STATISTICS BY AFFILIATION OF SCHOOL: 1978-79 SCHOOL YEAR

Affiliation	Number of Schools With Secondary Grade Levels	Percent of Total Private Schools	Estimated Enrollment in Grades 9-12	Percent of Total Private Enrollment	Estimated Mean Student Enrollment in Grades 9-12
Total private	6,310	100.0	1,357,725	100.0	215.0
Non-Affiliated	2,296	36.4	223,772	16.5	97.5
Catholic	1,861	29.5	900,776	66.3	484.0
Baptist	510	8.1	42,340	3.1	83.0
Jewish	157	2.5	22,458	1.7	143.0
Lutheran	124	2.0	22,273	1.6	179.6
Episcopal	114	1.8	18,794	1.4	164.9
Other religious affiliation.	643	10.2	62,537	4.6	97.3
Non-Catholic unclassified[a] .	610	9.6	65,033	4.8	106.6

SOURCE: NORC School Universe Tape.

[a] These schools, except four, are schools from the CIC file not found in the NCES file.

not greatly different, over 80 percent of the students are in religiously affiliated schools. (For discussions of the historical and doctrinal backgrounds of the various types of schools given in table 2.2.1, as well as others not included here, see Kraushaar 1972 and Erickson 1978).

Table 2.2.2 shows the distribution of various types of schools, classified by grade levels covered and curriculum. In general, the table shows, for types of curriculum, that there are few vocational-technical schools outside the public school system, but there are comparable percentages of special education schools and alternative schools, with some of each to be found in all types of schools.

Finally, table 2.2.3 shows the percentage of male, female, and coeducational schools among private schools of all affiliations, and table 2.2.4 the percentage of boarding schools among them. As indicated earlier, the affiliation breakdowns used here are not used in later chapters, which are based on the High School and Beyond sample of schools and students. These tables thus serve to give some sense of the kind of schools contained within the private sector, especially the non-Catholic private sector (or, as it is called later, the "other private" sector).[1]

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[1] Data from NCES on private school enrollments for the 1978-79 school year show that about 80 percent of all students who attend private "secondary only" schools are in Catholic schools. The figure of 66 percent given in table 2.2.1 reflects the fact that a great number of private, non-Catholic high school students attend schools that are classified as "combined elementary and secondary."

We are indebted to Roy Nehrts from NCES for the tabulations on private schools, and to the technical report of the Sage group (McLaughlin and Wise 1980).

TABLE 2.2.2

NUMBERS AND PERCENTAGE DISTRIBUTIONS OF PUBLIC AND PRIVATE SCHOOLS BY TYPE OF SCHOOL: 1978-79 SCHOOL YEAR

Type of School	Total Schools		Secondary Only	Combined Elementary-Secondary	Special Education	Vocational-Technical	Alternative
	Number	Percent					
All schools	18,951	100.0	75.0	18.0	4.0	1.5	1.4
Public	13,429	100.0	90.1	7.0	0.1	2.2	0.5
Private:							
No affiliation	2,293	100.0	16.7	50.6	25.2	0.2	7.1
Catholic	1,688	100.0	83.1	7.6	7.3	0.6	1.2
Baptist	510	100.0	3.9	95.1	0.2	0.0	0.2
Jewish	157	100.0	45.2	48.4	3.8	0.6	0.6
Lutheran	124	100.0	52.4	39.5	7.3	0.0	0.8
Episcopal	114	100.0	45.6	49.1	1.8	0.0	3.5
Other affiliation .	643	100.0	16.0	78.9	2.3	0.2	2.3

NOTE: Details may not add to totals because of rounding.

SOURCE: This table is based only on schools that appeared on the NCES school universe file; excludes schools in the Curriculum Information Center file for which the NCES file had no data.

TABLE 2.2.3

NUMBER AND PERCENTAGE DISTRIBUTIONS OF PRIVATE SCHOOLS WITH DIFFERENT AFFILIATIONS, BY SEX OF STUDENTS SERVED: 1978-79 SCHOOL YEAR[a]

Affiliation	Total Schools		Males Only	Females Only	Both Males and Females
	Number	Percent			
Total private	5,529	100.0	9.2	9.7	81.1
No affiliation	2,292	100.0	5.9	2.6	91.5
Catholic	1,691	100.0	16.6	25.6	57.9
Baptist	508	100.0	0.8	0.0	99.2
Jewish	157	100.0	40.1	14.7	43.2
Lutheran	124	100.0	1.6	0.0	98.4
Episcopal	114	100.0	14.0	11.4	74.6
Other	643	100.0	1.2	1.1	97.7

SOURCE: NORC School Universe Tape.

NOTE: Details may not add to totals because of rounding.

[a] This table is based only on schools that appeared on the NCES school universe file; it escludes schools in the Curriculum Information Center file for which the NCES file had no data.

TABLE 2.2.4

NUMBER AND PERCENTAGE DISTRIBUTIONS OF SCHOOLS WITH DIFFERENT AFFILIATIONS, BY DAY-BOARDING MIX: 1978-79 SCHOOL YEAR[a]

Affiliation	Total Schools		Day Only	Boarding Only	Mixed: Day and Boarding
	Number	Percent			
Total private	5,528	100.0	82.9	3.9	13.2
No affiliation	2,293	100.0	77.5	6.0	16.6
Catholic	1,691	100.0	89.8	2.7	7.6
Baptist	507	100.0	97.6	0.6	1.8
Jewish	157	100.0	65.0	3.2	31.9
Lutheran	124	100.0	84.7	1.6	13.7
Episcopal	114	100.0	50.0	7.0	43.0
Other affiliation .	642	100.0	82.1	2.7	15.3

SOURCE: NORC School Universe Tape.

[a] This table is based only on schools that appeared on the NCES school universe file; it excludes schools in the Curriculum Information Center file for which the NCES file had no data.

CHAPTER 3

THE STUDENT COMPOSITION OF PUBLIC AND PRIVATE SCHOOLS

This chapter addresses a series of questions about the student composition of public and private schools. Two wholly different issues of economic, religious, and racial segregation are raised by the existence of private schools. The first, and the one to which most attention has been given, is the segregation between the public sector and the private sector. The second is the segregation that exists among schools within each sector.

Although these issues are different, they are related, because the criticism that private schools are divisive along economic, religious, or racial lines points to both forms of segregation. The existence of a private school alternative may allow those with financial resources to segregate themselves from the remainder in public school, and the existence of choice among private schools may facilitate further segregation within the private sector itself. If, for example, minorities attending private schools are concentrated in schools enrolling a small proportion of whites, then having a large proportion of minority students in the private schools is hardly a rebuttal to the charge that private education functions to increase social divisiveness along racial lines.

Yet matters are not as clear as the criticism would suggest, because choice exists within the public sector as well. Residential mobility, the principal way in which such choice is exercised, has increased over the years, and, along with it, the potential for families with sufficient resources to segregate their children from others, wholly within the public sector. Thus, an examination of these issues does not merely document the obvious. Rather, it examines segregating tendencies as they are manifested both within and between the sectors of education. For each issue area the analysis begins with a comparison of segregation between sectors and moves on to a comparison of within-sector segregation. The basic method used for assessing the extent of within-sector segregation is described in the appendix.

In addition to the issues related to the racial and ethnic, economic, and religious compositions of private and public schools, a fourth substantive area, one that has been growing in importance in recent years, is addressed in this chapter: the education of handicapped children. Following the presentation on the other three issue areas are summary tables and a brief discussion of the role of the private sector in the education of the handicapped.

Finally, with respect to racial and ethnic segregation between the public and private sectors, it is useful to gain some sense of the impact of differences in family resources and other background characteristics on the enrollment rates of different groups in the private sector. Of most interest from a policy perspective would be the impact of reduced tuition on these rates, through something like an educational voucher or a tuition tax credit. Data from this study are not appropriate for examining this question. It is possible, however, to estimate the relative importance of family income on the probability of private school enrollment for different groups. This is done for blacks, Hispanics, and whites in the last section of this chapter.

3.1 The Racial and Ethnic Backgrounds of Students in the Public and Private Sectors, and Distributions Among Schools Within Each Sector

Issues related to the racial and ethnic compositions of private schools constitute a major component of the controversy surrounding private education. Policies designed to facilitate private education are frequently opposed because private schools have sometimes functioned as a means for whites to escape the racial integration that has been imposed in the public sector. And it is generally recognized that private schools enroll proportionately smaller numbers of minority students, particularly blacks and Hispanics.

Past research supports this claim. Kraushaar's (1972) survey of 251 private secondary schools found that, overall, less than 5 percent of the total enrollment was of racial or ethnic minority status. Higher proportions are estimated by more recent studies, however. Abramowitz and Stackhouse (1980, p. 149), in a survey of 454 private schools in 1977, selected to be representative of the student populations in private schools, estimate 5.7 percent Hispanic students and 8.3 percent black students in the private sector. The National Assessment of Education Progress estimates 4 percent Hispanic students and 12 percent black students of the thirteen year old age group in private schools in 1980.[1] These figures compare with 7.0 percent of Hispanics and 12.8 percent of Hispanics in the total U.S. 10th and 12th grade populations (according to our estimates). The estimated proportions of blacks in the private sector from these last two studies are higher than our own (which is about 5 percent), though our estimate of the overall proportion of

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[1] The authors thank Barbara Ward of the National Assessment of Educational Progress for providing these figures.

Hispanics (about 6 percent) corresponds closely to the Abramowitz-Stackhouse estimate.

The High School and Beyond survey was designed to provide accurate representation of the black and Hispanic student population in American secondary education. The two-stage probability sample that was employed drew schools as the first-stage unit and a random sample of students within the selected schools as the second stage. Oversampling was carried out on seven types of schools, four of which were included to facilitate analyses concerned with black or Hispanic students. The normally sampled public schools included school racial composition as one of the stratification criteria.

Table 3.1.1 shows the distribution of white, black, and Hispanic students among the three school types, as well as the distributions for the sophomore and senior classes.[1] As prior research and public opinion suggest, blacks are proportionately overrepresented in the public sector and underrepresented in the private sector. Averaging over grades 10 and 12, the percentage of blacks in Catholic schools is a little under half that in the public schools, while the percentage of blacks in the other private schools is only about a fourth that in the public schools. The percentage of Hispanics in the private schools is much closer to that in the public schools than is the case for blacks. The percentage in the Catholic schools approximates that

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[1] The race/ethnicity variable is constructed from items BB089 and BB090 in the codebook. Students are classified here as Hispanic if they gave as their origin or descent any one of the four classes under the heading of "Hispanic or Spanish" on BB090, regardless of how they responded to BB089. Students are classified as white if they listed themselves as "white" on BB089 and did not describe themselves as of Hispanic or Spanish origin on BB090. Similarly, students are identified as black if they listed themselves as "black" on BB089 and did not mark Hispanic or Spanish origin on BB090. Thus constructed, this variable includes over 95 percent ot the students surveyed. (Nearly all the remainder consists of persons who classified themselves in a racial category other than black or white.)

TABLE 3.1.1

PERCENTAGE DISTRIBUTION OF WHITES, BLACKS, AND HISPANICS IN PUBLIC AND PRIVATE SCHOOLS BY GRADE: SPRING 1980

Race-Ethnicity[a]	U.S. Total		Public		Private					
					Total		Catholic		Other Private	
	Grade				Grade					
	10	12	10	12	10	12	10	12	10	12
Total enrollment:										
Sample number	29,504	27,412	25,754	23,902	3,750	3,510	2,783	2,656	967	854
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White	74.9	78.8	73.7	78.0	86.2	86.2	83.9	85.4	90.4	87.9
Black	13.9	11.5	14.8	12.2	4.5	5.0	5.8	5.5	2.2	4.1
Hispanic	7.6	6.2	7.7	6.3	6.5	5.8	7.5	6.7	4.6	4.2
Other	3.6	3.5	3.7	3.6	2.9	2.9	2.9	2.5	2.9	3.9

NOTE: Percentages are based on the weighted number of students. Details may not add to totals due to rounding.

[a] See the footnote on the preceding page for details on the construction of the race ethnicity variable.

in the public schools, and the percentage in the other private schools is about two-thirds that in the public schools.[1]

Thus table 3.1.1 shows that the percent of blacks differs considerably in the public and private sectors, but that the percent of Hispanics is similar in the public and private sectors. An equally important question, however, is just how the sectors compare in the segregation among different schools within each sector. On the one hand, even if there were a high proportion of minorities in private schools, a high degree of internal segregation among these schools would have the same segregating consequences as if the proportion of minorities were low. On the other hand, even if the public schools contain a high proportion of minorities, a high degree of internal segregation within the public schools would have the same segregating consequences as if the whites were segregated in private schools. It is important to recognize, in examining the measures of segregation to be presented next, that these address only one of the two components of the overall impact of the private sector on segregation. For this component, that is, internal segregation within the sector, the proportion of each racial or ethnic group in the sector is irrelevant. For segregation between sectors, it is only these proportions that are relevant. The overall impact, resulting from the combination of these two components, will be discussed after examining internal segregation of each sector.

Measures of intergroup contact and of intergroup segregation have been constructed to examine internal segregation. (See the appendix for methods of calculation.) The measure of contact is a measure of the average proportion of a student's schoolmates who are from another group. It is affected both by the proportion of students of the other group in that sector and by their distribution among the schools of that sector. The measure of segregation was constructed by standardizing the measure of contact by the proportion of students of the other group in the sector. Thus it reflects only the distribution of students among the schools in the sector, given their overall numbers.[1]

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[1] The sampling error on the proportion of Hispanics in other private schools is especially high because over half of the Hispanic students sampled in this sector are in a single school.

Table 3.1.2 presents the indices of intergroup contact and segregation as applied to racial and ethnic groups. The measure of interracial contact of blacks with whites is a measure of the proportion of the average black students' schoolmates who are white; the measure works in reverse for the contact of whites with blacks. The values of .38 and .07 in column 2 of table 3.1.2, for example, mean that about 38 percent of the average black child's classmates in public schools are white, and that about 7 percent of the average white student's classmates are black.

The results tell something about the racial distribution within the school sectors. Looking first at the measures of contact, the proportions are generally consistent with what we would expect, given the overall proportions at the top of the table. That is, since the public sector has about 11 percent fewer whites than the private sector, we would expect that the proportion of the average black's and the average Hispanic's schoolmates who are white would be lower in the public than in the private sector. Comparing the second and third columns of table 3.1.2 makes it clear that this is the case.

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[1] These measures are taken from Coleman, Kelly, and Moore (1975, p. 22), where they were developed and used to measure interracial contact and interracial segregation. Since their development, they have been used by a number of investigators, and they now constitute one of the standard ways of measuring segregation in schools. See Zolcth 1978, Cortese et al. 1976, Becker et al. 1978, Thomas et al. 1978.

TABLE 3.1.2

INDICES OF INTERRACIAL AND INTERETHNIC CONTACT AND SEGREGATION IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Measure	U.S. Total	Public	Private		
			Total	Catholic	Other Private
Overall proportions					
Non-Hispanic whites...	.767	.756	.862	.846	.893
Non-Hispanic blacks...	.128	.137	.047	.056	.030
Hispanics............	.070	.071	.062	.071	.044
Index of Contact, s_{ij}					
For Whites and Blacks					
Proportion of the average black's schoolmates who who are white, s_{bw}..	.39	.38	.61	.58	.71
Proportion of the agerage white's schoolmates who are black, s_{wb}	.07	.07	.03	.04	.02
For Whites and Hispanics					
Proportion of the average Hispanic's schoolmates who are white, s_{hw}	.53	.53	.57	.63	.40
Proportion of the average white's schoolmates who are Hispanic, s_{wh} ...	.05	.05	.04	.05	.02
Index of segregation, r_{ij} (ranges from 0 = no segregation to 1 = complete segregation)[a]					
Segregation of blacks and whites	.49	.49	.29	.31	.21
Segregation of Hispanics and whites...	.30	.30	.34	.25	.55

[a] For the method of calculating the values of s_{ij} and r_{ij}, see appendix A. Although the value of r_{ij} is theorectically identical to the value of r_{ji}, slight discrepancies will occur because of rounding.

However, for the average black student, the difference is much greater than 11 percent. About 60 percent of the classmates of the average black student in the private sector are white, as compared with about 38 percent for the average black student in the public schools, a difference of 22 percent. For Hispanics, the figures are much closer: the average Hispanic student has 53 percent white classmates in the public sector and 57 percent in the private sector. The pattern generally holds when the Catholic and other private schools are considered separately, the only exception being the low proportion of white schoolmates for the average Hispanic in the other private schools (.40).

Following the same logic, the expected proportions of the average white student's classmates who are black and Hispanic would be higher in the public schools (except in the public-Catholic comparison for Hispanics, where the proportions should be about equal). The measures of contact are consistent with expectation on this point as well.

The measures of intergroup segregation within each sector are given in the bottom two rows of table 3.1.2. Comparing columns 2 and 3, it can be seen that blacks and whites are substantially less segregated in the private sector than in the public sector: the black-white segregation index takes on a value of .49 in the public sector versus only .29 in the private. For Hispanics, the sectors are much closer, with the private sector index (.34) indicating slightly greater segregation than is found in the public sector (.30).

Examining black-white segregation and Hispanic-Anglo segregation within the Catholic sector alone (where most of the private sector minorities are to be found) shows that in both cases, the internal segregation of the Catholic sector is less than that in the public sector--substantially so for blacks and whites, slightly so for Hispanics and Anglos.

One might object to this analysis of segregation, arguing that segregation is properly compared only within a local area. For example, part of the segregation in the public sector results from the fact that blacks and whites are distributed differently over localities and regions of the country. Thus, what appears to be a high degree of segregation (.49 in the index for black-white segregation given in table 3.1.2) is in part due to geographic separation. There is, of course, a similar effect of geographic separation on the private sector index as well.

There is merit to this point that segregation should be measured within localities. It is not possible, however, to measure the degree of segregation or interracial contact within each localiity, because the survey covers only a sample of schools. The closest that it is possible to come is to examine the internal segregation in the public sector, calculated on a district-by-district basis and averaged over the country. Data for 1972, published in 1975, give a figure of of .29 as the average segregation within districts of the public sector (Coleman, Kelly, and Moore, 1975:34). While there will have been some changes since 1972, it is difficult to know in which direction. On the one hand, some court-ordered desegregation has occurred, but on the other, there has been continuing resegregation (see Farley, et al., 1980).

This index of average within-district segregation, though not the most desirable for comparison purposes, is the closest available. It suggests that the larger part of the .49 segregation calculated for these data remains as within-district segregation, and thus that the comparison of the within-sector segregation measures in the public and private sector, as is done here, may be usefully made.

Information from the measures of within-sector intergroup contact and segregation are displayed respectively, as the percentages of blacks and Hispanics attending schools of four different racial composition in tables 3.1.3 and 3.1.4. The first table indicates that over half of the black students in the private sector attend schools that are less than 20 percent black, but only about a fifth of the public school blacks attend such schools. About 45 percent of the black students in the public sector attend predominantly black schools, compared to 17 percent in the private sector. Table 3.1.4 shows that, although over half of all Hispanics in both sectors are in schools that are less than 20 percent Hispanic, a somewhat higher percentage of Hispanics in the private sector are in predominantly Hispanic schools. However, the pattern in the Catholic sector is similar to that in the public sector.

It is possible, however, to examine segregation within each region for the separate sectors, as a step toward eliminating the impact of differing racial proportions in different localities. Contact and segregation measures were calculated for each of the sectors within the major geographical regions in the U.S. The sample of public schools is representative for the nine census regions of the country. However, the Catholic and other private samples were selected to be representative only for the broader division of four regions. Consequently, it is possible to compare for these regions (East, South, Midwest, and West) the segregation in each of the sectors. For the other private sector, in fact, there are only 27 schools; because of this, only public-Catholic comparisons may be reasonably made in each region separately. Other private schools are not reported in this regional analysis.

Table 3.1.5 shows first the proportions of non-Hispanic whites, non-Hispanic blacks, and Hispanics in each of the school sectors in each of the

TABLE 3.1.3

PERCENTAGE DISTRIBUTION FOR BLACK STUDENTS IN PUBLIC AND PRIVATE SCHOOLS BY LEVEL OF BLACK ENROLLMENT: SPRING 1980

Percent Black Enrolled	U.S. Total	Public	Private		
			Total	Catholic	Other Private
Totals:					
Sample number	7,850	6,991	859	783	76
Percent	100.0	100.0	100.0	100.0	100.0
0 to 19 percent	20.6	19.4	53.3	54.6	48.8
20 to 49 percent	35.2	35.4	30.0	24.0	51.2
50 to 79 percent	21.3	21.8	6.6	8.5	0
80 to 100 percent	22.9	23.4	10.0	12.9	0

TABLE 3.1.4

PERCENTAGE DISTRIBUTION FOR HISPANIC STUDENTS IN PUBLIC AND PRIVATE SCHOOLS BY LEVEL OF HISPANIC ENROLLMENT: SPRING 1980

Percent Hispanic Enrolled	U.S. Total	Public	Private		
			Total	Catholic	Other Private
Totals:					
Number	6,680	5,613	1,067	997	70
Percent	100.0	100.0	100.0	100.0	100.0
0 to 19 percent	59.1	59.7	52.7	58.8	34.1
20 to 49 percent	18.2	18.4	16.2	21.0	1.6
50 to 79 percent	17.5	16.7	26.6	14.4	64.3
80 to 100 percent	5.2	5.3	4.4	5.8	0

NOTE: Percentages are based on the weighted numbers of students. Details may not add to totals because of rounding.

TABLE 3.1.5

PERCENTAGE DISTRIBUTION OF WHITES, BLACKS, AND HISPANICS IN PUBLIC AND CATHOLIC SCHOOLS BY REGION[a]: SPRING 1980

Race-Ethnicity	U.S. Total	Public	Catholic
1. East			
Number (000s)	11,776	9,612	1,833
Percent	100.0	100.0	100.0
White	80.9	79.4	88.0
Black	11.4	12.5	6.0
Hispanic	5.1	5.4	4.3
Other	2.7	2.8	1.8
2. South			
Number	18,553	16,559	1,161
Percent	100.0	100.0	100.0
White	66.8	65.2	79.7
Black	22.9	24.4	6.0
Hispanic	7.9	8.1	10.8
Other	2.3	2.3	3.5
3. Midwest			
Number	16,373	14,325	1,669
Percent	100.0	100.0	100.0
white	86.9	86.8	87.4
black	7.5	7.7	5.1
Hispanic	3.7	3.6	5.4
Other	1.9	1.9	2.1
4. West			
Number	10,214	9,160	776
Percent	100.0	100.0	100.0
White	72.4	72.3	72.0
Black	5.2	5.1	5.4
Hispanic	12.9	12.7	16.1
Other	9.7	9.9	6.5

NOTE: Percentages are based on the weighted number of students. Details may not add to totals due to rounding.

[a] The U.S. Census Regions that the four regions used here and in tables 3.1.5 and 3.1.7 are composed of are (1) "East": New England and Middle Atlantic; (2) "South": South Atlantic, East South Central and West South Central; (3) "Midwest": East North Central and West North Central and (4) "West": Mountain and Pacific.

four regions. It is first important to note that the standard errors to the proportions, particularly in the Catholic sector, are quite large. This means that any interpretations must be done with recognition that a high degree of uncertainty is involved. The comparisons in this section must be regarded with some caution.

With these precautions, it is useful to note the following indications from the data:

1. Catholic schools have proportions of Hispanics that are comparable in every region to the proportions in the public schools.
2. In the Midwest and West, the proportions of blacks in the Catholic schools do not vary greatly from those in the public schools. In the East, the Catholic schools have less than half the proportion of blacks that the public schools do. In the South, the disparity is much greater. Catholic schools have only about a fourth the proportion of blacks in public schools.
3. The regional differences in proportion of black and Hispanic children are themselves great, with a much higher proportion of black children in the South than in the East, Midwest, and West.

Turning to the measures of interracial contact (S_{bw} and S_{wb}) and segregation (r_{bw}) shown in table 3.1.6 for blacks and whites, the following generalizations can be drawn:

1. The measures of interracial contact, S_{bw} and S_{wb}, indicate that in all regions except the West, the average black student in the public sector has a lower proportion of white schoolmates than the average black in the Catholic sector. The average white student in the public sector has a proportion of black schoolmates equal to that for the average Catholic sector white in the Midwest and West. In the East and—to a much more pronounced extent--in the South, the average public school white has a higher proportion of black schoolmates than the average Catholic school white.
2. The measure of segregation, r_{bw}, shows that the segregation of blacks and whites is substanially lower in the Catholic sector than in the public sector across all regions, except in the West.

Table 3.1.7 shows the measures of interethnic contact and segregation for Hispanics and Anglos. Looking first at the measures of contact, S_{hw} and

TABLE 3.1.6

INDICES OF INTERRACIAL CONTACT AND SEGREGATION[a] FOR BLACKS AND WHITES IN PUBLIC AND CATHOLIC SCHOOLS BY REGION: SPRING 1980

Measure	U.S. and Regional Totals	Public	Catholic
1. Overall National			
S_{bw}	.39	.38	.58
S_{wb}	.07	.07	.04
R_{bw}	.49	.49	.31
2. East			
S_{bw}	.38	.37	.63
S_{wb}	.05	.06	.05
R_{bw}	.52	.54	.22
3. South			
S_{bw}	.41	.41	.61
S_{wb}	.14	.15	.05
R_{bw}	.38	.37	.24
4. Midwest-North			
S_{bw}	.33	.32	.50
S_{wb}............	.03	.03	.03
R_{bw}	.62	.64	.42
5. West			
S_{bw}	.41	.41	.39
S_{wb}............	.03	.03	.03
R_{bw}	.43	.44	.46

[a] S_{bw}: The proportion of the average black student's schoolmates who are white.

S_{wb}: The proportion of the average white student's schoolmates who are black.

R_{bw} (mathematically equal to R_{wb}): The degree to which blacks and whites are segregated; ranges from 0 = no segregation to 1 = complete segregation.

TABLE 3.1.7

INDICES OF INTERRACIAL CONTACT AND SEGREGATION[a] FOR HISPANICS AND ANGLOS IN PUBLIC AND CATHOLIC SCHOOLS BY REGION: SPRING 1980

Measure	U.S. and Regional Totals	Public	Catholic
1. Overall National			
S_{hw}	.53	.53	.63
S_{wh}	.05	.05	.05
R_{hw}	.30	.30	.25
2. East			
S_{hw}	.49	.47	.61
S_{wh}	.03	.03	.03
R_{hw}	.39	.40	.30
3. South			
S_{hw}	.48	.46	.65
S_{wh}	.06	.06	.09
R_{hw}	.29	.29	.19
4. Midwest			
s_{hw}	.74	.73	.78
S_{wh}	.03	.03	.05
R_{hw}	.15	.16	.11
5. West			
S_{hw}	.52	.54	.46
S_{wh}	.09	.10	.10
R_{hw}	.28	.25	.36

[a] S_{hw}: The proportion of the average Hispanic student's schoolmates who are Anglo.

S_{wh}: The proportion of the average Anglo student's schoolmates who are Hispanic.

R_{hw} (mathematically equal to R_{wh}): The degree to which Hispanic and Anglo are segregated; ranges from 0 = no segregation to 1 = complete segregation.

S_{wh}, it is generally the case that the average Hispanic in the public schools has a lower proportion of Anglo schoolmates than does the average Hispanic Catholic school student in all regions except the West. The public and Catholic sectors are much more similar in terms of the average Anglo students' proportion of Hispanic schoolmates. Turning to the measure of segregation, r_{hw}, the Catholic sector is less segregated along these lines in all regions except the West.

In summary, several conclusions about within-sector and between-sector racial and ethnic segregation can be stated. For Hispanics, very little difference exists between the public and private sectors, either with respect to the proportions of Hispanics in each sector, or with respect to the internal distribution of Hispanics within the schools of each sector. The distribution of Hispanics between public and private schools is about the same as that of non-Hispanic whites. Within each sector the degree of segregation between the two groups is not especially high, and it is about the same in the public and private sectors.

The results for black-white segregation are considerably more complex. There is a substantially smaller proportion of blacks in the private sector than in the public sector--less than half as high a proportion in the Catholic schools, and less than a quarter as high in the other private schools. But information on the internal segregation between blacks and whites within each sector gives a different picture: the public sector has a substantially higher degree of segregation than the private sector (or either of its two components separately). Thus, the integrating impact of the lesser degree of segregation within the private sector counteracts the segregating impact of the lower proportion of blacks in that sector.

What is the end result of these conflicting tendencies, the overall impact of private schooling on black-white segregation? An answer can be obtained by comparing the overall black-white segregation among all high schools, both public and private, to the segregation expected if students currently in private schools were absorbed into the public system. It is assumed that students would be distributed among schools within the public sector in exactly the way whites and blacks are currently distributed in the public sector. Although differences found in such a comparison would be quite small, since only 10 percent of the student population would change schools, the direction is important.

Assuming that no private schools existed, and that blacks and whites currently in private schools were absorbed into the public schools with exactly the same distribution among schools as is currently found in the public schools, the degree of segregation for the total U.S. student population would be that given by the segregation index for the public sector, .49 (see row 8, column 2 of table 3.1.2). Comparing this to the current segregation index for all U.S. students, also .49, suggests that the two tendencies cancel each other out.

The assumption that blacks and whites currently in private schools would be absorbed into public schools with the same distribution as found currently in public schools is, however, a strong assumption, one which has been criticized. It is useful to examine some elements of this assumption. First, it is useful to think of the segregation index of .49 for the public schools in the country as a whole as composed of two parts: the segregation among schools within the same district, and racial segregation due to blacks and whites living in different districts (for example, in different parts of the country). It is principally the first which is of interest, although both are contained in the figure of .49 shown for the public schools in table 3.1.2. (The figure of .29 mentioned earlier estimates the within-district component of this, though for an earlier date, 1972.) Or, more accurately, it is not only the within-district component that is of interest, but the "within-locality" component, which for a city consists of the city and suburbs. The reason this is of interest, rather than the smaller confines of district or the larger areas of region or nation, is that the extent of the relevant area is the area to which students from a private school could be expected to enter if the private school were closed.

We have assumed private schools are located in areas where the public schools have a racial composition equal to the national average. If, as is shown later to not be the case (in table 3.5.1), they are located in areas that have a higher proportion of whites than the national average, absorption into the public sector would increase the segregation index by increasing the between-localities component.

We have also assumed that within-district segregation in the localities where private schools are located is equal to the national average, so that absorption into the public schools would mean absorption into districts which showed a within-district segregation equal to that of the national average. Without having district-by-district knowledge of this, that assumption cannot be tested. We can, however, go one step toward this by carrying out the same comparison at the regional level as was made at the national level. That is, instead of treating the whole nation as if it were a single school district for purposes of comparison, we can go one step below and treat regions as single districts--because the sample of public and private schools was designed in such a way as to be regionally representative.

This regional comparison can be made by referring back to table 3.1.6. That table shows, despite the fact that regions do differ in proportion black, most of the segregation is not between regions, but within. The regional measures of segregation in the public schools (.54, .37, .64, .44) are not generally lower than the national measure (.49). Second, in three regions, everywhere except the South, the segregation index in the public schools is higher than that for the public and private schools together, indicating that in those regions, absorption of private school students into the public sector in the way public sector students are currently distributed would increase overall segregation.

While in the South the overall impact of private schools is in a slightly segregative direction, the data show that, in the other three regions, their impact is in a slightly integrative direction. This is the result of two factors: the public schools in the South are more integrated than those of any other region; and the difference between the proportion black in the public schools of the South and the private schools in the region is especially great. Thus the extent of the largely segregated private schools which grew up in the South after desegregation in the late 1960s and early 1970s is, together with the low degree of segregation in the public sector, sufficient to make the overall impact of the private schools in that region a slightly segregative one.

The regional pattern of contact and segregation for Hispanics and Anglos is similar to that for black-white contact and segregation, with the West for Hispanics replacing the South for blacks. However, there is a difference. In the South, the segregative impact of the Catholic sector is through an underrepresentation of blacks in that sector, not internal segregation. In the West, the segregative impact of the Catholic sector is not through underrepresentation, but through greater internal segregation between Anglos and Hispanics within the Catholic sector. In the other three regions, the internal segregation is less in the Catholic sector, and comparison of r_{bw} in the public sector with the region total shows that the overall contribution of the Catholic sector is toward reduced segregation. In the West, however, the overall contribution is toward increased segregation (.28 compared to .25), and in contrast to all other comparisons, the internal segregation within the Catholic sector is greater than that in the public.

Overall, these regional comparisons indicate that for both blacks and Hispanics, the Catholic schools in three regions of the country are not only less internally segregated than the public schools, but have an overall integrative impact on the system. However, this pattern is reversed for blacks in the South and for Hispanics in the West. In the South the reversal is due to the much greater proportion of blacks enrolled, and in the West to the greater internal segregation between Hispanics and Anglos in the Catholic sector.

These two regional discrepancies suggest what may be a broader principle, since both occur in the region where the given minority (blacks in the South, Hispanics in the West) is most numerous. The principle suggested is that schools in the private sector will be more likely to exert a segregative impact where the proportion minority is greater.

3.1.1 Alternative Measures of Segregation

The index r_{ij}, used in this section and throughout the chapter, is only one of several commonly used indices of segregation. Others are the dissimilarity index, the Gini coefficient, and an information-theoretic measure. (The measure we have used is sometimes described as a variance-based measure.)

Calculations of these measures of racial and ethnic segregation in the public and private sectors is carried out in the appendix and we will summarize the results here. The information-theoretic segregation index ranks nearly all groups in the same order as the r_{ij} measure, with the following exceptions: it gives a Hispanic-Anglo segregation index in the private sector that is slightly smaller than that for the public sector, while the r_{ij} private sector index is slightly larger. The Gini and dissimilarity indices show smaller black-white segregation in the private sector as a whole and in the Catholic sector than in the public sector, but unlike r_{ij} and the information theory index, give larger values for the other private sector. In the case of Hispanics, these two indices show higher segregation of Hispanics and Anglos in the Catholic sector than in the public sector, unlike r_{ij} and the information theory measure.

In general, the measures divide into two groups. The variance-based and information-theoretic measures behave similarly, and the dissimilarity index and the Gini coefficient behave similarly. The construction of the information-theoretic and variance-based measures makes them explicitly relative to the proportion of each race in the sector; thus they separate out information about the proportion of each race that is in the sector and treat this information strictly in the context of between-sector segregation. This is even more explicitly done in the information-theoretic measure than in the variance-based measure. The dissimilarity index and the Gini coefficient do not do this, but incorporate in the measure information about the unevenness of the division between racial groups in the sector as a whole.

3.2. The Economic Backgrounds of Students in the Public and Private Sectors and Distributions of Students Among Schools Within Each Sector

Although the possible divisiveness of private schools along racial lines has received considerable attention in recent years, the first such concern was with economic divisiveness. This is the normal form that public-private stratification would take, since private schools are costly to the user and public schools are free. And it is the stratification that comes to mind when the elite private schools are discussed.

However, a large number of private schools do not fit this image. The Catholic schools were not designed for an upper class elite, and many of the other private schools are also based on religious values rather than social class homogeneity. Consequently, despite the fact that sending a child to private school costs parents money while sending a child to a public school does not, the diverse origins and affiliations of private schools suggest that private schools as a whole may serve students with economic backgrounds not greatly different from those of students served by public schools.

But even if this is true, it addresses only the question of economic segregation between the public and private sectors, not economic segregation within the private sector. And, if there are elite schools and nonelite schools in the private sector, there must be a considerable degree of economic segregation among schools within that sector.

Yet questions of economic segregation between the private and public school sectors and within the private sector do not exist in a vacuum. They exist, rather, within the framework of some degree of economic stratification among schools in the public sector itself. The residential geographic mobility that facilitates a degree of racial homogeneity in public schools, as shown in the preceding section, also facilitates a degree of economic homogeneity. Thus, the tendencies of private schools that lead to economic stratification between the private and public sectors, or within the private sector, must be seen in a context of economic stratification within the public school sector.

Consequently, the task involves examining the degree of economic stratification between the private and public sectors of education, the degree of stratification within the private sector as compared to that within the public sector, and finally, as in the case of race and ethnicity, the overall contribution of the private sector to economic segregation.

Looking first at the distributions of students between sectors, table 3.2.1 and figure 3.2.1 show that the directions of the economic differences among students in the public and private sectors are consistent with what past research and popular conception lead us to expect. The private sector as a whole has an income distribution somewhat higher than that of the public sector, with a median income of $23,200, compared to $18,700 for the public sector. Within the private sector, the differences are also in the expected direction: $22,700 for the students in Catholic schools, compared to $24,300 for the students in other private schools. At the same time, the income distribution in each sector is quite broad. Of particular interest is the fact that the private sector does not contain students from homogeneous economic backgrounds, nor does either of its two major subsectors. The greatest differences between the public and private sectors occur, as one might expect, at the extremes. At the lower extreme, both of the private subsectors have proportions of students from families with incomes of less than $12,000 that are less than half as high as those in the public sector. At the upper extreme, the Catholic schools have almost twice as high a proportion, and the other private schools almost three times as high a proportion, of students from families with incomes of $38,000 or more.

TABLE 3.2.1

PERCENTAGE DISTRIBUTION OF STUDENTS FROM VARIOUS ECONOMIC BACKGROUNDS AND MEDIAN FAMILY INCOMES IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Amount of Money Family Makes in a Year[a]	U.S. Total	Public	Private		
			Total	Catholic	Other Private
Totals:					
Number	49,567	43,391	6,176	4,614	1,562
Percent	100.0	100.0	100.0	100.0	100.0
$6,999 or less	7.2	7.7	2.6	2.4	2.9
$7,000 to $11,999	11.9	12.5	6.3	6.3	6.3
$12,000 to $15,999	16.7	17.2	12.4	12.8	11.5
$16,000 to $19,999	18.7	19.0	16.6	17.3	15.2
$20,000 to $24,999	18.1	18.0	19.2	20.7	18.1
$25,000 to $37,999	15.0	14.6	18.5	20.4	15.0
$38,000 or more	12.4	11.1	24.5	20.1	32.8
Median Income[b]	$19,000	$18,700	$23,200	$22,700	$24,300

NOTE: Percentages are based on the weighted numbers of students. Details may not add to totals because of rounding.

[a] Taken from responses to BB101, "Which (of seven groups) comes closest to the amount of money your family makes in a year?".

[b] Median income is obtained by linear interpolation within the income category in which the 50th percentile falls.

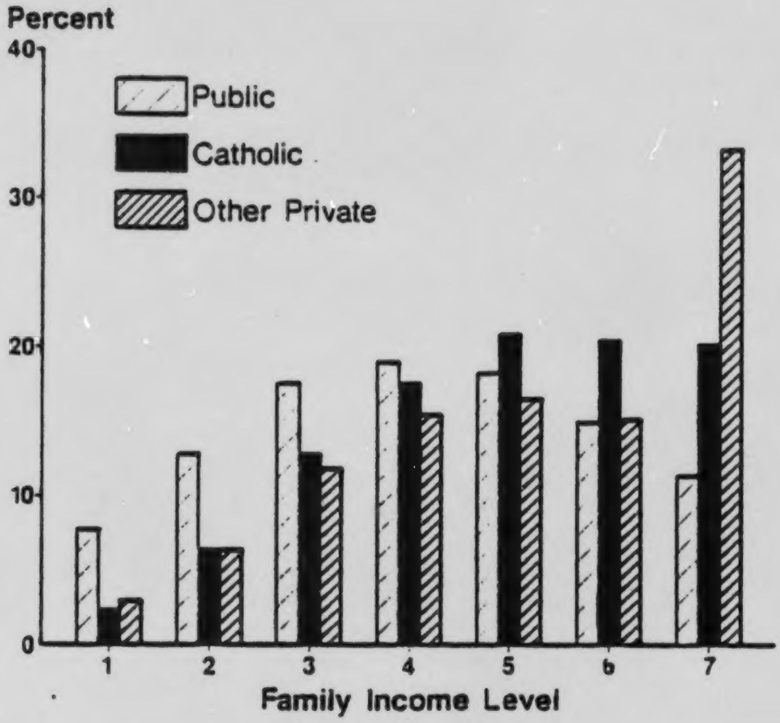

Fig. 3.2.1: Percent of students in public, Catholic, and other private schools by family income level: Spring 1980.

These differences suggest that a number of possible factors are functioning to reduce the accessibility of lower income students to private education. Foremost among these is simply the cost of private education. But it may also be that private schools tend to be located at some distance from residential concentrations of lower income families, thus further reducing their accessibility. While such an analysis of location cannot be included in this report, further research in this direction would be useful.

The second question relevant to examining the contribution of private schools to economic stratification concerns the distributions of students from different income levels within the sectors and school types. While it was shown that poorer students are underrepresented and wealthier students overrepresented in the private sector taken as a whole, asking whether students from different economic backgrounds who are enrolled in each sector attend the same schools or different ones is quite another question. To address this question, the measures of contact and segregation that were used for race and ethnicity can be used again. The variable identifying student economic backgrounds, BB101, is collapsed into three categories for this analysis: below $12,000, between $12,000 and $20,000, and above $20,000. Segregation was examined between those below $12,000, about 19 percent of the total, and those above $20,000, about 46 percent of the total.

Table 3.2.2 gives the results of the computations. As the overall proportions (given at the top of the table) would lead us to expect, the measures of contact, s_{ij}, show that the average low-income student in the public sector has a lower proportion of schoolmates from high-income families than such a student in the private sector (.323 versus .499, columns 2 and 3). The disparity between the proportions of low-income schoolmates for the average high-income student in the two sectors is even more pronounced--the high-income student in the private sector has less than half as high a proportion of lower income schoolmates as the high-income student in the public sector (.070 versus .148).

These measures of contact values reflect both the proportions of high- and low-income students in the sector as a whole and the distribution of these students within each sector. The index of segregation values given at the bottom of the table, which standardize on the proportion of each group in the sector, show, by sector, the economic segregation of students from the two different income backgrounds. As in the case of race and ethnicity, the degree of economic segregation is lower in the private sector as a whole, and

TABLE 3.2.2

INDICES OF CONTACT AND SEGREGATION OF PUPILS FROM HIGHER AND LOWER INCOME FAMILIES IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Measure	U.S. Total	Public	Private		
			Total	Catholic	Other Private
Overall Proportions:					
High Income ("over \$20,000" on BB100)[a]	.429	.411	.595	.577	.629
Low Income ("under \$12,000" on BB100)[a]	.178	.188	.084	.082	.086
Index of Contact, s_{ij}[b]					
Proportion of the average low income student's schoolmates who are from high income families	.331	.323	.499	.475	.542
Proportion of the average high income student's schoolmates who are from low income families	.137	.148	.070	.068	.075
Index of segregation, r_{ij}[b]					
Segregation of high income students from low income students	.23	.21	.16	.18	.14

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[a] Taken from responses to BB100, "Which (of three groups) comes closest to the amount of money your family makes in a year?".

[b] For the method calculating the values of s_{ij} and r_{ij}, see the Appendix. Although the value of r_{ij} is theoretically identical to the value of r_{ji}, slight discrepancies will occur due to rounding.

in the Catholic and other private sectors separately, than in the public sector. But the differences between the public and private sectors in internal segregation are much less here than in the case of black-white segregation.

With economic segregation, then, there is the same counterbalancing tendency as found in the case of racial segregation: high economic backgrounds are overrepresented in the private sector, but the private sector is less internally segregated than is the public. The overall levels of economic segregation are considerably lower than those of black-white segregation (for example, in the public sector, .21 versus .49), but a similar counterbalancing pattern holds.

Similarly, the question is asked, as in the case of black-white segregation, what is the overall impact of these two counterbalancing tendencies? Again, this is done by comparing economic segregation among schools for all sectors together (the U.S. total in the table) to that for the public sector. This comparison shows the economic segregation, among U.S. schools as a whole, that would result from private school students being absorbed into the public schools and distributed among public schools as current public school students are. Here the comparison of .23 to .21 shows that the overall impact of the private sector increases slightly the degree of economic segregation, rather than effect an exact counterbalancing, as in the case of black-white segregation.

The similarity of pattern in the cases of racial and economic segregation raises a question about whether there might be a common cause. That is, in both areas, the segregation within the private sector is less than that within the public sector, while in both areas the private sector has higher proportions of the population group with greater resources (in the black-white comparison, whites; in the economic comparison, higher-income groups).

Two related explanations seem plausible, both based on the assumption that parents will attempt to have their children in schools with others who are likely to do well in school, and that those parents with greater resources (higher incomes, or white) will be better able to do this. The explanations are:

1. The proportion of lowest income students and the proportion of black students are lower in the private schools than in the public schools. Thus the parent who has chosen the private sector will be less concerned that the norms of the school and the standards of instruction will be brought down by students that the parent, a priori, assumes are more likely to have such an impact, that is, students from low-income families and black students (who of course are often from low-income backgrounds). Public school parents will have the same general concerns, but, with a higher proportion of low-income or black (or both) students in the sector as a whole, will manifest those concerns by moving their children to schools where the proportions are lower, if they have the resources to do so. It is white, higher income families who more often have such resources, and the end result is a higher degree of internal segregation.

2. Private schools, as will be evident in subsequent chapters, have greater control of their students and exercise stronger discipline than do public schools. This is based, to a considerable degree, on the fact that private schools can expel students or use other disciplinary measures with much less legal constraint, and much more parental acquiescence, than the public schools. This stronger discipline means that a parent concerned about the school's norms and standards will be more assured in the private sector that those norms and standards are maintained by the staff, rather than being shaped by the type of student body. Consequently, the private school parent will be less concerned about student body composition, since that student body is "kept in hand" by the staff. Public school parents with the same general concerns, but seeing the norms and standards more shaped by the composition of the student body, will exert greater effort to have their children in schools where they see that composition favorable to school achievement. Parents with greater resources will be more successful in this, thus leading to greater racial and economic segregation in the public than in the private sector.

3.3 The Religious Backgrounds of Students in Public and Private Sectors and Distributions of Students Among Schools Within Each Sector

Historically, issues of religious divisiveness have been central to debates concerning private education. Although economic differences are an important factor in private school enrollment, religious concerns have been, and continue to be, probably the strongest motivating force in parents' decisions to send their children to private schools. This motivation can be better seen, perhaps, in other countries. Some countries have state-supported schools operated by religious groups, along with secular schools, while in other countries the major sectors of publicly supported education are those operated by different religious denominations.

As pointed out in chapter 1, about 80 percent of private sector students are enrolled in schools affiliated with some specific religious denomination. This suggests that affirming basic religious values within the context of formal education is a major determinant of private school enrollment. This choice usually presents no problem. But when the question of public aid to private education is raised, many see a conflict with the commitment of the United States to the separation of church and state. In addition to the constitutional question, there is a social issue in the potential divisiveness of the orientations of religiously affiliated schools. Specifically, it is sometimes argued that the existence of religiously affiliated schools isolates youth of different faiths and generates intolerance of other religious faiths. Traditionally, this argument has been applied primarily to Catholic schools, and, because only the numbers of Catholic schools in the sample are sufficient to allow analysis in this area, the analyses conducted here will focus on Catholic schools. In particular, the extent to which Catholic and non-Catholic students are segregated from each other, as a result of private education, will be examined.

Table 3.3.1 gives a picture of the proportions of the students from each of the major religious groups in each school sector. With the exception of Episcopalians, Catholics, and Jews, the public and the non-Catholic private sectors tend to be quite similar. While Catholics represent the overwhelming majority of student enrollment in the Catholic school sector, the Catholic contingent in the public schools (30.7 percent) means that, given the numerical bases, most Catholics are in the public schools. In addition, and perhaps contrary to general assumptions, the relative percentages of Baptists and Lutherans are smaller in the non-Catholic private sector than they are in the public sector, despite the traditionally strong Lutheran schools and the increasing number of Baptist schools.

Table 3.3.1 shows that there are sharply different proportions of Catholic students in the public, Catholic, and other private sectors. The next question concerns the distribution of Catholic students within each of the sectors (and, if the sample of other private schools were much larger, would also include the distribution of students of other religious backgrounds among the schools in that sector). Information on this distribution is given in table 3.3.2. This table shows that the average Catholic student in the Catholic school sector indeed has a very low proportion of schoolmates who are non-Catholic (.081), and that the average non-Catholic student in the public and other private sectors has a much smaller proportion of Catholic schoolmates (.240 and .125 compared to .805). Turning to the index of segregation, which standardizes on the differing proportions in each sector (given in the last row of the table), it is not the case that non-Catholics and Catholics are more segregated within the Catholic sector than are non-Catholics and Catholics in public and other private schools. The opposite is true: non-Catholic and Catholic students are the least segregated from one

TABLE 3.3.1

PERCENTAGE DISTRIBUTION OF STUDENTS FROM VARIOUS RELIGIOUS BACKGROUNDS IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Religious Background	U.S. Total	Public	Private		
			Total	Catholic	Other Private
Totals:					
Number[a]	53,490	46,481	7,009	5,240	1,769
Percent	100.0	100.0	100.0	100.0	100.0
Baptist	21.0	22.5	7.4	1.9	18.0
Methodist	8.6	9.3	3.0	1.0	6.8
Lutheran	6.2	6.7	2.0	1.0	4.0
Presbyterian	4.5	4.7	2.8	1.1	6.1
Episcopalian	2.1	2.0	3.1	0.7	7.8
Other Protestant.	4.1	4.2	3.1	0.7	7.7
Catholic	34.2	30.7	65.8	90.9	17.4
Other Christans .	6.5	6.8	3.6	0.9	8.9
Jewish	2.1	1.9	4.2	0.3	11.9
Other religion ..	4.3	4.5	1.8	0.4	4.5
None	6.4	6.8	3.1	1.2	6.9

NOTE: Percentages are based on the weighted numbers of students. Details may not add to totals because of rounding.

[a] The total number reflects the usable responses to BB091 ("What is your religious background?") and therefore differs slightly from other totals given in this section.

TABLE 3.3.2

INDICES OF CATHOLIC/OTHER RELIGIOUS BACKGROUND CONTACT AND SEGREGATION IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Measure	U.S. Total	Public	Private		
			Total	Catholic	Other Private
Overall Proportions:					
Catholics	.342	.307	.658	.909	.174
Other religious background	.658	.693	.342	.091	.826
Index of contact, s_{ij}, for Catholics and "Others":					
Proportion of the average Catholic's schoolmates who are "Other"	.462	.541	.127	.081	.590
Proportion of the average "Other's" schoolmates who are Catholic	.241	.240	.244	.805	.125
Index of segregation, r_{ij} (ranges from 0 = no segregation to 1 = complete segregation)[a]	.30	.22	.63	.11	.28

[a] For the method of calculating the values of s_{ij} and r_{ij}, see appendix A. Although the value of r_{ij} is theoretically identical to the value of r_{ji}, slight discrepancies will occur because of rounding.

another in the Catholic schools (.11). Somewhat surprisingly, Catholic students are the most segregated in the non-Catholic private schools, though in no case is the extent of segregation very high.

Overall religious segregation in U.S. schools as a whole is higher than that in any single sector, because of the concentration of Catholics in Catholic schools. However, it is lower than black-white segregation and about the same as Hispanic-Anglo segregation (.30 compared to .49 or .30).

We would expect the Catholic/non-Catholic segregation within the private sector as a whole to be higher than that in the public sector or either of the private sectors separately, and it is (.63). This means that, in contrast to the case of black-white segregation, policies that would draw children from the public sector to the private sector would move them from a sector of lower religious segregation to a sector of higher religious segregation.

It is also possible to ask, as was done for racial, ethnic, and economic segregation, just what is the overall contribution of private schools to religious segregation among schools in the United States. The current degree of segregation, as shown in the table, is .30. If students from the private sector were absorbed into the public sector and distributed themselves exactly as those currently in the public sector, the degree of segregation would be .22. Thus the private schools do contribute to the segregation of Catholic and non-Catholic students, raising the segregation index from .22 to .30.

3.4 Handicapped Students in Public and Private Schools

The final category of students that this chapter examines is the handicapped. Information about enrolled handicapped students is obtained from students' self-reports and from the school questionnaire. While neither provide a wholly satisfactory information source, both give some information about handicapped students. Although table 2.2.2 in the previous chapter shows that there is a considerably higher proportion of special education schools in the private sector than in the public, table 3.4.1, based on student reports, indicates that the public schools enroll a somewhat higher proportion of handicapped students than the private schools in our sample. However, the differences between sectors in table 3.4.1 are rather small for those reporting "some" kind (that is, including less severe kinds) of handicap.[1] The third row in the table, which reflects more serious handicaps, shows a somewhat greater difference. About three-fifths as high a proportion of the Catholic and other private school students as of the public school students reported a limiting handicap.

When principals' responses are used to estimate the percentages of handicapped children in these schools, the differences are more pronounced (table 3.4.2). These reports indicate that the average percentage of the student body that is handicapped in the public sector is more than double that of non-Catholic private schools, and over four times that of Catholic schools. The reason for this discrepancy between school reports and student reports is not clear. A comparison with table 3.4.1, which shows much less difference between sectors, suggests the possibility that students are classified as handicapped in public schools who would not be classified as handicapped in private schools. Three reasons for such a difference in classification seem possible: (1) in the larger schools found in the public

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[1] Some of the students in private special education schools are paid for by public funds. Where the students' handicaps were so severe that they could not fill out a questionaire, or when schooling did not terminate with a high school diploma, the school was ineligible by definition from the population of schools and students to be studied.

TABLE 3.4.1

PERCENT OF STUDENTS REPORTING HANDICAPS IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

	U.S. Total	Public	Private		
			Total	Catholic	Other Private
Percent with some handicap other than visual (BB087A, 87C, D, E, F or G)	12.0	12.2	9.4	8.5	11.2
Percent with visual handicap (BB087B)	13.0	12.7	16.1	17.2	13.8
Percent with a physical condition, limiting work or education (BB088)	7.1	7.4	4.7	4.7	4.6

TABLE 3.4.2

MEAN PERCENT OF SCHOOL'S STUDENT BODY THAT IS HANDICAPPED AND CRITERIA USED TO CLASSIFY, FOR PUBLIC AND PRIVATE SCHOOLS AS REPORTED BY PRINCIPALS: SPRING 1980

	U.S. Total	Public	Private		
			Total	Catholic	Other Private
Mean percentage of students classified as handicapped (SB034 ÷ SB002A) ..	4.2	4.9	1.5	1.1	2.3
Percent of schools using various criteria to classify students					
standard test ...	74.9	90.1	28.1	33.0	18.2
Federal guidelines	74.6	91.7	18.0	23.4	7.1
State guidelines	79.6	96.6	23.0	28.0	12.9
Counselor's judgment	90.8	94.5	85.4	94.2	85.4

sector, children who would be able to function normally in a smaller school must be classified as special and treated in a different fashion; (2) there is in the public sector an administrative incentive in the form of government aid for classifying children as handicapped, an incentive that does not exist or exists less often in the private sector; and (3) the more severely handicapped students, who would not respond to the survey, may be more numerous in the public sector. In any case, the data are not sufficient for making strong inferences about the relative proportions of handicapped children in public and private schools.

3.5 Factors Affecting Access to Private Education

The examination of private school student composition has thus far focussed on the distributions of students from various backgrounds between and within the educational sectors. An important general conclusion is that the extent of within-private sector segregation along racial and economic lines is lower than that found in the public schools, and that there is between-sector segregation because blacks and lower-income students are substantially underrepresented in private education.

Before turning to an examination of why certain groups are underrepresented in the private sector, it is useful to comment on the within-sector segregation. The higher degree of within-sector segregation in the public sector over the private sector is striking, because it is ordinarily overlooked when asking about the impact of private schools on segregation. The data serve as a reminder that the public schools of the United States constitute a rather highly stratified and differentiated set of schools, not the common school envisioned by Horace Mann.

In this section we will make an effort to address the analytical question of what factors affect different students' chances of enrolling in a private school. Turning first to the issue of the underenrollment of blacks in private education, three factors in particular are worth examining as hypotheses amenable to empirical test. First, the geographic location of private schools may account for some part of the difference between public and private schools in their proportion of black students. Private schools may tend to be located in areas with lower proportions of blacks than is true for public schools. Second, income differences between black and white families are likely to account for another part of the difference. Third, religious differences among racial or ethnic groups may play a part. The fact that blacks are less likely to be Catholic than are Hispanics and non-Hispanic whites may account for some part of their underrepresentation in the Catholic schools as compared to the public schools--though not, of course, for the greater underrepresentation of blacks in the other private schools. Part of this difference between Catholic and other private schools in the proportion of blacks enrolled may be due to the first two of these three factors. Rather than religion, a greater proportion of Catholic schools may be located in or near concentrations of black students in large cities, and tuition may be lower in Catholic schools.

The first of these hypotheses, geographic location of private schools, can be tested with data on the racial and ethnic composition of the local areas where the sampled schools are found. The 1970 U.S. Census counts, aggregated according to U.S. Postal Service zipcodes,[1] come closest to fitting this description. Since available school information includes their zipcodes, it is possible to compare the racial and ethnic composition of a school to the racial and ethnic composition of the same age group in the area covered by that zipcode. The Census classification closest to the ages of high school sophomores and seniors is the 16 to 21 year age category.

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[1] The data employed are from the U.S. Bureau of the Census Population and Housing Fifth Count Summary Tapes, 15 and 20 percent samples, Files A and B. File A consists of summaries for 3-digit zipcode areas, and represents the entire United States population. File B consists of summaries for the 5-digit zipcode areas within Standard Metropolitan Statistical Areas (SMSAs) only. Of the 1,015 schools in the High School and Beyond sample, 548 have 5-digit zipcode information, 456 have 3-digit, and 11 could not be matched with either of the Census files because of missing information on the latter.

To make such a comparison, the numbers of blacks, Hispanics,[1] and all 16- to 21-year-olds in zipcode areas containing sampled schools of a given sector are aggregated and weighted by the numbers of sophomores and seniors in schools of that sector in the zipcode. (Methods of carrying out these calculations are described in appendix A, section A.3.).

Table 3.5.1 presents the results of these comparisons.[2] The first and

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[1] There is no Hispanic category in the Census race question, and Hispanics do not enter into the "other" category of that question. For present purposes, we have equated "Hispanic" with the Census category "Spanish American." The latter refers to people of "Spanish language," of Spanish surname, or of Puerto Rican birth or parentage, depending on the area of the country. In order to obtain mutually exclusive white, black, and Hispanic categories, we assume that most of those that the Census Bureau classified as "Spanish American" classified themselves as "white" on the race question. Thus, for each zipcode area, the number of non-Hispanic whites is obtained by subtracting the number of Spanish American from the number of whites. Proportions are calculated by dividing the numbers of non-Hispanic whites, Spanish Americans, and blacks by the count of all 16 to 21 year olds in the area.

[2] The U.S. total 1970 areal proportions of 16 to 21 year old blacks and Hispanics differ somewhat from the totals for the 1980 High School and Beyond survey. The 1970 zipcode data show 10.2 percent black and 5.0 percent Hispanic. Table 3.5.1 shows that the 1980 sample is 12.8 percent black and 7.0 percent Hispanic. Assuming no measurement error, the differences between these figures point to demographic changes over the last decade. In the absence of detailed information about where the local changes have occurred which, when aggregated, account for these overall shifts, we assume as a first approximation that the changes are distributed uniformly. The figures given in table 3.5.1 are derived on this assumption. They are computed by simply adding the differences between the overall proportions of blacks and Hispanics in 1980 and their respective 1970 overall proportions to the proportional local compositions for the average students in each school type. The Census data show that the average public school student attends a school located in an area that is .102 black and .049 Hispanic and that the average private school student attends a school located in an area that is .098 black and .055

TABLE 3.5.1

PROPORTIONAL RACIAL AND ETHNIC COMPOSITION OF THE SURVEYED HIGH SCHOOLS' LOCAL GEOGRAPHIC AREAS, WEIGHTED BY SCHOOL ENROLLMENTS, AND DIFFERENCES BETWEEN LOCAL AREAS AND SCHOOLS, BY EDUCATIONAL SECTOR: SPRING 1980

Measure	U.S. Total	Public	Private		
			Total	Catholic	Other Private
1. Proportion of local population that is black[a] ..	.128	.128	.124	.132	.110
2. Proportion of sector enrollment that is black[b] ..	.128	.137	.047	.056	.030
3. Over- or under-representation in proportion black.	—	.009	-.077	-.076	-.080
4. Proportion of local population that is Hispanic [a]	.070	.069	.075	.080	.067
5. Proportion of sector enrollment that is Hispanic	.070	.071	.062	.071	.044
6. Over- or under-representation in proportion Hispanic	—	.002	-.013	-.009	-.023
7. Sum total of school enrollments used for weighting local population[c] proportion	6,852,696	6,195,338	658,158	429,224	227,934

SOURCE: (1) High School and Beyond, 1980; (2) U.S. Bureau of the Census 1970 Census of the Population and Housing Fifth Count Summary tapes (15 and 20 percent samples). Files A and B: Population and Housing summaries for 3- and 5-digit Zipcode areas.

NOTE: Details may not add to totals because of rounding.

[a] Local proportions are corrected for overall changes in proportion black, white, and Hispanic from 1970 to 1980. (See footnote 2, p. 74 for further discussion.)

[b] Sector proportions are obtained by combining the figures for sophomores and seniors given in table 3.1.1.

[c] These figures represent the sum of student weights without reference to any other variable; because of missing values the sums are higher than any of the total numbers given in other tables.

fourth rows give the proportion of blacks and Hispanics aged 16 to 21 that live in the local areas of the school of the average student in each of the different school types; the second and fifth rows give the proportions of blacks and Hispanics respectively in the schools of each sector. Comparing the public and private sectors as wholes shows that private schools are located in areas where the black population is very slightly lower than the average for the public schools (12.4 percent vs. 12.8 percent) and where the Hispanic population is very slightly higher (7.5 percent vs. 6.9 percent). The differences in both cases are sufficiently small that they can be regarded as approximately the same.

From these data, then, it cannot be concluded that blacks are underenrolled in private schools because the schools are not located close to where blacks live. If the geographic distribution of schools were the only constraint on black enrollment we would expect to find a black enrollment in the private sector about the same as that in the public sector. As the third row of table 3.5.1 shows, the average private school student attends a school that has about 7.7 percent fewer blacks enrolled in it than there are blacks in the area in which the school is located, while the average public school student attends a school with 0.9 percent more blacks in it than in the surrounding area.

For Hispanics, one would again expect to find about the same proportions in the public and private sectors. Line 6 shows that only a small underrepresentation of Hispanic students, 1.3 percent, exists in the private sector.

Hispanic. Thus, since the difference between the 1980 and 1970 overall proportions of blacks is .128 - .102 = .026, the corrected proportion of blacks in the community for the average public school student is .102 + .026 = .128, while for the average private school student it is .098 + .026 = .124. For Hispanics the overall difference is .070 - .050 = .020, and the corrected proportions are .049 + .020 = .069 for the average public school student and .055 + .020 = .075 for the average private school student.

Looking at Catholic and other private schools separately, there are more blacks in the areas surrounding Catholic schools (13.2 percent on the average) than in the areas surrounding other private schools (11.0 percent). This partially accounts for the greater numbers of blacks in Catholic schools (5.6 percent compared to 3.0 percent). Similarly, Catholic schools are located in areas with greater concentrations of Hispanics; but line 6 shows that the Catholic schools contain approximately the same proportion of Hispanics as reside in those areas (7.1 percent to 8.0 percent), while the other private schools have 2.3 percent fewer Hispanics than are found in the local areas.

In summary, although other private schools are located in areas with somewhat fewer black residents, which partly accounts for their lower black enrollments, the low enrollment of blacks in private schools as a whole cannot be accounted for by the geographic distribution of black residence. For Hispanics, the enrollment in Catholic schools is slightly above the national average; the lower enrollment in other private schools again cannot be accounted for by geographic distribution, though, as before, these schools are located in areas with somewhat fewer Hispanic residents.

The second hypothesis, that income differences are responsible for the lower enrollments of blacks and Hispanics in Catholic and other private schools, can be examined by looking at the proportion of Hispanics, blacks, and non-Hispanic whites in each of these sectors at each income level. These subgroups in the private sector are small, so the data show some erratic variability; the general results should be regarded as suggestive but not conclusive. Figures 3.5.1 and 3.5.2 show this for Catholic and other private schools respectively. Table 3.5.2 gives the numbers and percentages upon which the graphs are based.

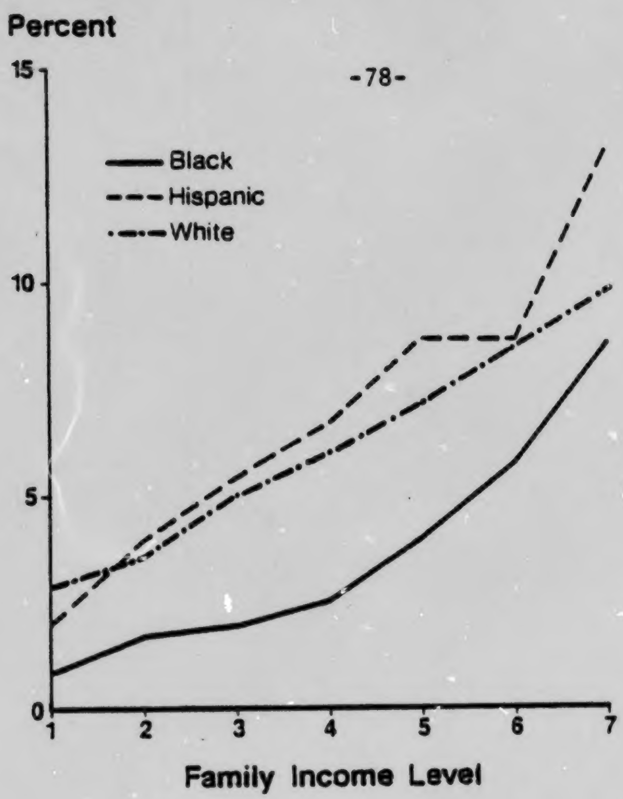

Fig. 3.5.1. Percent of students from differing income levels in Catholic schools, by race and ethnicity: Spring 1980.

Figure 3.5.1 suggests that income differences account for a large part of the lower enrollments of blacks in Catholic schools. At the lower- and middle-income levels, the difference in enrollments of blacks and whites in Catholic schools is 2 to 3 percent; it is 1 percent at the highest level. This compares with a difference of 4.2 percent when income is not taken into account. (The column headed "Total" in table 3.5.2 shows that 7.1 percent of all non-Hispanic whites and 2.9 percent of all blacks are enrolled in Catholic schools). Assuming that the differences represent a true income effect, these data indicate that the public-Catholic difference in proportions of blacks would be reduced to less than half its size if blacks had the same income distribution as whites.

There is a higher percentage of Hispanics than non-Hispanic whites in Catholic schools at nearly every income level, increasingly so at higher income levels. Thus, if the incomes of Hispanics and non-Hispanic whites were the same, Hispanics would be somewhat overrepresented in Catholic schools.

TABLE 3.5.2

PERCENT OF WHITES, BLACKS, AND HISPANICS FROM EACH FAMILY INCOME LEVEL IN CATHOLIC AND OTHER PRIVATE SCHOOLS[a], AND TOTAL NUMBERS SAMPLED: SPRING 1980

(Standard errors of percents in parentheses[b])

	Income groups							
	1	2	3	4	5	6	7	Total
Total numbers in sample								
Non-Hispanic White	1,566	3,372	5,760	6,858	6,879	5,979	5,079	35,493
Non-Hispanic Black	1,255	1,393	1,148	954	852	512	357	6,471
Hispanic	900	1,139	1,108	963	787	458	348	5,703
Percents in Catholic sector								
Non-Hispanic White	3.0 (.65)	3.7 (.49)	5.2 (.44)	6.0 (.43)	7.3 (.47)	8.7 (.55)	10.2 (.64)	7.1 (.20)
Non-Hispanic Black	.8 (.38)	1.9 (.55)	2.1 (.63)	2.8 (.80)	4.3 (1.04)	5.9 (1.57)	8.9 (2.27)	2.9 (.31)
Hispanic	2.0 (.71)	4.2 (.90)	5.6 (1.04)	7.1 (1.24)	9.0 (1.53)	9.0 (2.01)	13.9 (2.78)	6.5 (.49)
Percents in other private sector								
Non-Hispanic White	2.3 (.57)	2.0 (.36)	2.7 (.33)	2.9 (.30)	3.4 (.33)	3.5 (.35)	9.2 (.61)	3.9 (.15)
Non-Hispanic Black	.4 (.26)	1.0 (.40)	.5 (.30)	.9 (.46)	.6 (.39)	.7 (.56)	1.9 (1.08)	.8 (.16)
Hispanic	0.3 (.26)	1.5 (.54)	1.7 (.58)	2.2 (.71)	2.0 (.75)	3.7 (1.17)	4.3 (1.8)	2.1 (.28)

[a] The percents signify the percent of each of the twenty-one subpopulations defined by cross-classifying students in terms of family income and race-ethnicity that are enrolled in Catholic and Other Private Schools. The percents are based on the weighted numbers of students.

[b] Standard errors are calculated according to the formula

$$S.E.(p) = 1.5 \sqrt{p(100-p)/\text{unweighted } N}$$

where the number 1.5 is a correction factor that adjusts for the effect of clustering in the sample design of the High School and Beyond survey. The p's are the percents given in the table, and the unweighted N's are the total numbers in the sample shown above. Correction factors for standard errors of these and other subpopulations are found on p. 12, Table 2 of the High School and Beyond Codebook, available from the National Center for Educational Statistics.

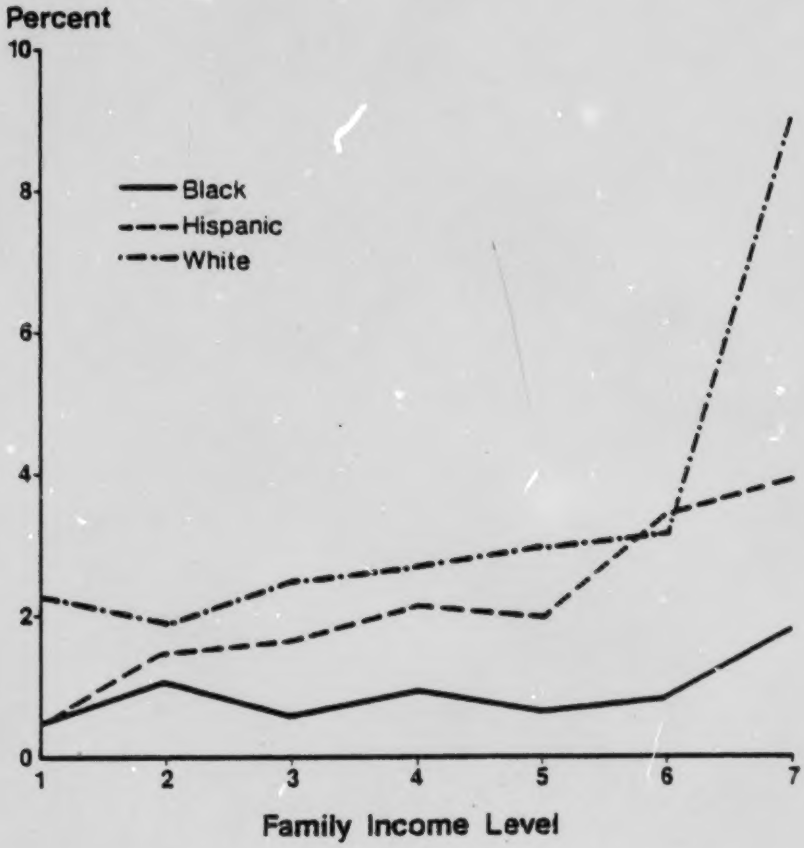

Fig. 3.5.2. Percent of students from differing income levels in other private schools, by race and ethnicity: Spring 1980.

Figure 3.5.2 shows that the increase in percent enrolled with increase in income is much less for all three groups in other private schools than in Catholic schools. The gradient is small and about the same for Hispanics and non-Hispanic whites, except for those at the highest income level, and it is nearly zero for blacks, again excepting the highest income level. Over most of the income range, the difference between the percentage of all non-Hispanic whites enrolled in these schools and the percentage of all Hispanics enrolled is about 1 percent. The difference between whites and blacks is about 2 percent at lower income levels, 3 percent or more at higher levels.

These differences can be compared to the overall differences when income is not controlled. The column headed "Total" in table 3.5.2 shows that 3.9 percent of non-Hispanic whites, 2.1 percent of Hispanics, and .8 percent of non-Hispanic blacks are enrolled in other private schools. The differences with income uncontrolled are 1.8 percent for Hispanics and 3.1 percent for blacks. Controlling for income reduces the differences between non-Hispanic whites and Hispanics from 1.8 percent to about 1 percent, but reduces the white-black difference by a lesser amount. Thus income accounts for some part of the differential enrollment of non-Hispanic whites and Hispanics in other private schools, for a smaller part of the differential enrollment of whites and blacks.

These comparisons, of course, do not take religion into account. The fact that about 9 percent of blacks, about 35 percent of whites, and over 65 percent of Hispanics are Catholic[1] means that the enrollment rates of Catholics in each of these three groups in Catholic schools must be quite different from that shown in table 3.1.1. Further, because there are differences in income distribution among blacks, whites, and Hispanics, Catholics and non-Catholics from these three groups who have the same income levels may be enrolled at rates somewhat different from those shown in figure 3.5.1. Figures 3.5.3 and 3.5.4, for blacks, whites, and Hispanics at each income level, show the enrollment rates for Catholics and non-Catholics separately. The percents and sample bases for these graphs are shown in tables 3.5.3 and 3.5.4. The total column in table 3.5.3 indicates that, among Catholics, Hispanics are least likely to be enrolled in Catholic schools (10.3

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[1] These figures are obtained from the crosstabulation of the constructed race-ethnicity variable with BB091, which asked students to identify their religious background.

percent), while blacks and whites are about equally likely to be enrolled (18.7 and 18.8 percent). Among non-Catholics, table 3.5.4 shows that the overall rates are low for all groups, but that blacks are most likely to be enrolled in Catholic schools (1.5 percent), while Hispanics and whites are about equally likely to be enrolled (1.1 and 1.0 percent).

Turning to the percents at each income level, the results presented in Figures 3.5.3 and 3.5.4 are striking, although the small numbers of cases among black Catholics at each income level make the location of particular points erratic. Generally, with income controlled, black Catholics have higher enrollment rates in Catholic schools than white Catholics, and both groups have higher rates than Hispanics. Similarly, among non-Catholics, the black enrollment rate in Catholic schools is higher than the white rate, and again both are higher than the Hispanic rate.

Among both Catholics and non-Catholics the Catholic school enrollment rate rises considerably more sharply at high income rates for blacks than for whites, a result that is strengthened by consistency across the two religious groups. The evidence indicates that high-income blacks have considerably higher enrollment rates in Catholic schools than do whites of the same religious group.

Thus, when the effects of both income and religious background are controlled for, blacks are enrolled in Catholic schools in higher proportions than are whites and Hispanics. Two caveats should be entered with respect to these findings. First, the numbers of blacks and Hispanics at the higher income levels are not large, as is seen in the upper panels of table 3.5.2 and table 3.5.3. This results in relatively high standard errors for the percentages of blacks and Hispanics in Catholic schools from these income levels. Especially in figures 3.5.3 and 3.5.4, the confidence bands around the curves are quite wide, and it is possible that the true population figures could be substantially larger or smaller than our estimates. While the

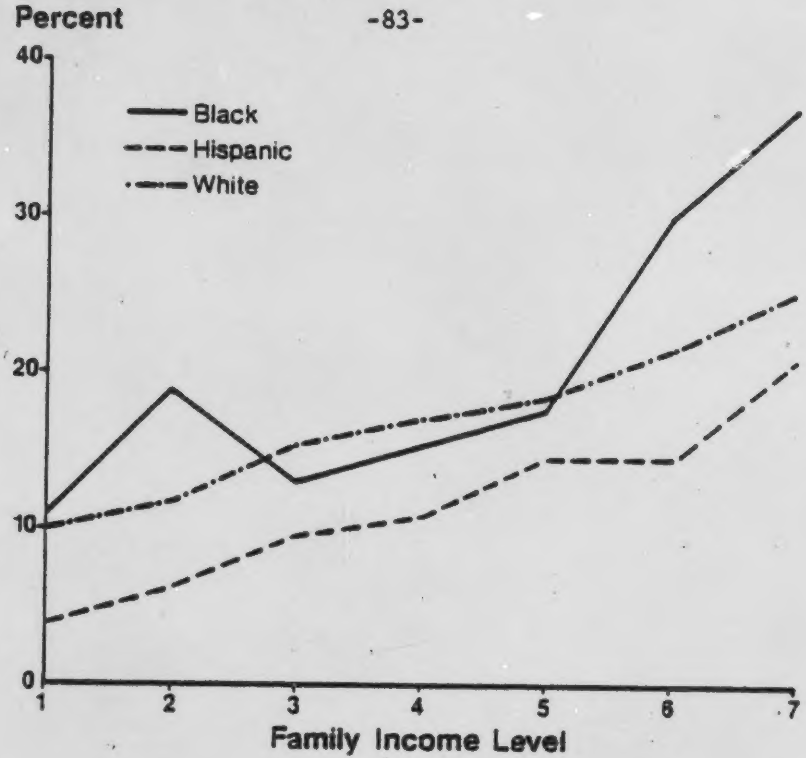

Fig. 3.5.3. Percent of Catholic students from differing income levels in Catholic schools, by race and ethnicity: Spring 1980

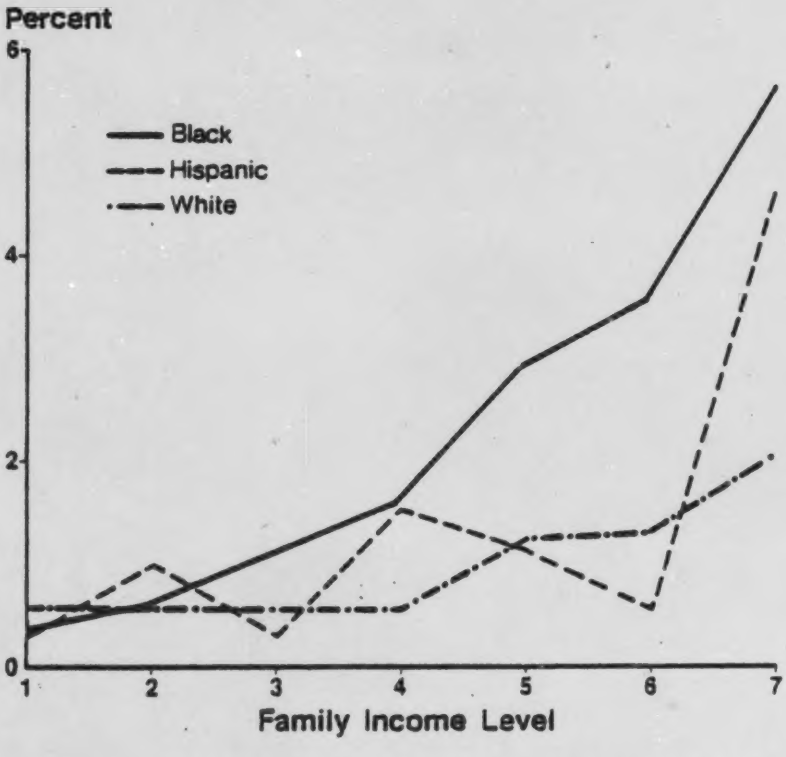

Fig. 3.5.4. Percent of non-Catholic students from differing income levels in Catholic schools, by race and ethnicity: Spring 1980.

TABLE 3.5.3

PERCENT OF CATHOLIC WHITES, BLACKS, AND HISPANICS FROM EACH FAMILY INCOME LEVEL IN CATHOLIC SCHOOLS, AND TOTAL NUMBERS SAMPLED: SPRING 1980

(Standard errors of percents in parentheses[a])

	Income groups							
	1	2	3	4	5	6	7	Total
Total numbers in sample								
White	434	974	1,828	2,289	2,467	2,184	1,804	11,980
Black	75	116	115	106	103	63	54	632
Hispanic	590	826	769	687	549	328	226	3,975
Percent in Catholic sector								
White	9.8 (2.14)	11.9 (1.56)	15.7 (1.27)	17.3 (1.19)	18.4 (1.17)	21.7 (1.32)	25.3 (1.54)	18.8 (.54)
Black	10.7 (5.36)	19.3 (5.51)	12.9 (4.69)	15.6 (5.29)	17.6 (5.63)	30.3 (8.68)	37.7 (9.89)	18.7 (2.33)
Hispanic	3.7 (1.17)	6.4 (1.27)	9.5 (1.58)	10.9 (1.79)	14.7 (2.26)	14.4 (2.91)	21.2 (4.08)	10.3 (.72)

[a] For the method of calculating standard errors, see the footnote to table 3.5.2.

TABLE 3.5.4

PERCENTS OF NON-CATHOLIC WHITES, BLACKS, AND HISPANICS FROM EACH FAMILY INCOME LEVEL IN CATHOLIC SCHOOLS, AND TOTAL NUMBERS SAMPLED: SPRING 1980

(Standard errors of percents in parentheses[a])

	Income groups							
	1	2	3	4	5	6	7	Total
Total numbers in sample								
White	1,013	2,221	3,710	4,335	4,137	3,491	3,065	21,972
Black	994	1,103	898	767	661	385	257	5,065
Hispanic	202	224	253	219	172	98	98	1,266
Percent in Catholic sector								
White	.6	.5	.5	.5	1.2	1.3	2.1	1.0
	(.35)	(.23)	(.18)	(.17)	(.26)	(.28)	(.39)	(.10)
Black	.3	.6	1.1	1.6	2.9	3.5	5.5	1.5
	(.27)	(.35)	(.52)	(.68)	(.98)	(1.41)	(2.14)	(.26)
Hispanic	.2	.9	.3	1.5	1.1	.6	4.7	1.1
	(.48)	(.97)	(.52)	(1.23)	(1.19)	(1.15)	(3.19)	(.44)

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[a] For the method of calculating standard errors, see the footnote to table 3.5.2.

findings must be thus qualified, the striking consistency of the results across income levels represents an important finding.

A second caveat concerns the limitations of the method of analysis. The question addressed asks about the factors that influence enrollment in private versus public schools. Thus far the analysis has examined three factors (race-ethnicity, family income, and religious background) in some detail. But it is likely that other factors which are correlated with these three also influence the probability of attending private school. In so far as this is true, the effects that have been estimated thus far are inaccurate, either in the direction of being too low or of being too high.

In order to address these issues, a more rigorous method of analysis is required. Since our sample of Catholic schools allows for stronger inferences, the examination that follows is restricted to an analysis of factors affecting the probability of Catholic school as opposed to public school enrollment. The questions of interest are, first, what are the effects of race and ethnicity on enrollment, controlling on other factors presumed to affect a student's chances of enrolling in Catholic school; and second, how do differences in family income affect the enrollment rates of the different racial and ethnic groups? Because the dependent variable of interest is categorical (Catholic versus public school enrollment) and because the numbers in Catholic schools are relatively small compared with those in public schools, the ordinary least squares estimation procedure that is typically employed in multivariate analysis is inappropriate here. The method chosen for use here is logit analysis, a method particularly well suited to the problem at hand (see Hanushek and Jackson 1977:ch.7).

The model that is to be estimated specifies a number of social and economic background variables that are likely to affect the probability of enrollment in Catholic school. For this analysis, the sample is stratified by race and ethnicity, and the same model is estimated separately for whites, blacks, and Hispanics.[1] In addition to the factors of income and religious background, it is reasonable to include controls for other aspects of parental social status, and for parental aspirations for their children's education. Of the measures available in the High School and Beyond base year survey, the following are included in our model of selection into the Catholic sector:

1. parental income (thousands of dollars) (each of the seven income ranges shown in table 3.2.1 is identified with its midpoint. The midpoint of the "below $7,000" category is set at $3,500, and that for the "above $38,000" at $45,000);
2. mother's education (coded to range from 1 to 9, with 1=less than high school and 9=advanced professional degree);
3. mother's expectations for student's future education (coded 1=college, 0=other);
4. respondent's number of siblings ("Sibs");
5. religious background (coded 1=Catholic, 0=other);
6. region of the country (coded 1=Northeast, 0=other);
7. both parents present in respondent's household (coded 1=yes, 0=no);

---

[1] Because the effects of the independent variables on a student's probability of enrolling in Catholic school differ for blacks, Hispanics, and whites, it is methodologically appropriate to either estimate a single equation for all students that includes race and ethnicity interaction terms, or to stratify the sample by race and ethnicity. The latter approach has the drawback of complicating the presentation of results, but for the problem at hand no computer programs were available which simultaneously allowed the use of the student weights and the full number of cases in the sample. While omitting the weights does not seriously bias the estimates for whites, the oversampling of blacks and Hispanics in the Catholic sector necessitates the use of the weights. Since a program allowing the use of weights for sample sizes equal to the High School and Beyond samples of blacks and Hispanics is available (Coleman, 1981:53-62), we stratified by race and ethnicity. The models for blacks and Hispanics are thus estimated for the weighted sample, and the model for whites for the unweighted sample.

8. whether or not respondent expected to attend college when in the 8th grade (coded 1=planned to attend, 0= did not plan to);

9. family possessions: typewriter, more than 50 books (both coded 1=family owns, 0=family does not own).

The region variable is included since Catholic schools tend to be disproportionately located in the Northeast. The family possessions variables are included as additional proxies for parental social status and aspirations for their child. A more complete specification of the model would include father's occupation and education, but since these variables have relatively high non-response rates in this survey, they were omitted from the analysis.

Sophomores and seniors are combined to form a single sample for the analysis. Since the maximum likelihood method used in estimating parameters in logistic analysis requires that only students with usable responses to all variables in the model can be used, the number of deleted cases is quite large here despite the restrictions imposed on the model. Of the total sample of public and Catholic sophomores and seniors, 88 percent of the whites, 64 percent of the blacks, and 71 percent of the Hispanics entered the analysis.

Table 3.5.5 shows the results of the multivariate logistic estimation. Although logit model coefficients do not directly admit of an intuitive interpretation[1], the signs and strengths of the parameter estimates tell an interesting story. Consistent with crosstabular analyses, the statistically significant coefficient for the income variable in each subpopulation indicates

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[1] A logit coefficient signifies the change in the log of the odds resulting from a unit change in the independent variable. The log odds are transformed into ordinary probabilities by the equation:

$$P = 1/(1+e^{-XB})$$

where e is the natural logarithm base, X is a vector of determined values for the independent variables, and B is the vector of logit coefficients.

TABLE 3.5.5

LOGISTIC MODEL OF FACTORS AFFECTING PROBABILITY OF ENROLLMENT IN CATHOLIC SCHOOL[a]: SPRING 1980

Dependent Variable:	Catholic school enrollment (=1) versus public school enrollment (=0)		
Independent Variables	White (N=29,911) b	Black (N=4,093) b	Hispanic (N=3,987) b
Intercept	-6.153	-6.176	-7.206
Income	.014	.028	.023
Mother's education	.041	.098	.104
Mother's expectation	.492	.690	.450
Sibs	.004[b]	-.200	-.114
Catholic religious background	3.145	2.396	3.252
Northeast region	.292	.379	.455
Both parents present	.023[b]	.115[b]	.091[b]
8th grade college expectations	.487	.487	.553
Typewriter	.329	.662	.057[b]
Books	.215	.390[b]	.725
R^2	.135	.141	.101

[a] Sophomores and seniors are pooled in the analysis. Due to computer program availability, the white students are unweighted.

[b] Coefficient not significant at .05 level.

that family economic resources effect the probability of Catholic school enrollment independently of social status influences. Moreover, a comparison of the income coefficients for the three groups indicates that the effect of income is stronger for blacks and Hispanics than for whites. The additional effects of income that are specific to blacks and Hispanics suggest that changes in the cost of Catholic education may lead to relatively greater changes in the enrollment of these groups.

To describe the results of the logit analysis more concretely, estimates of the Catholic school enrollment probabilities for students of different backgrounds can be made. The primary interest here is in the different effects of income on the probability of Catholic school enrollment for whites, blacks, and Hispanics. To illustrate these effects, predicted enrollment rates for each of the three groups at seven different income levels are shown in table 3.5.7. (The income levels used here are the midpoints of seven categories of BB101). The rates are calculated by standardizing the logit equation to the average background given in table 3.5.6 on all variables except income. Two sets of estimates are obtained for each of the three racial and ethnic subpopulations. The first set is the predicted proportions of each group with backgrounds equal to that of the average U.S. high school student who would enroll in Catholic schools. (This background is represented by the means in the "total" column of table 3.5.6.) These predicted proportions thus indicate the rates that students from each of the family income levels who are white, black, or Hispanic would enroll in Catholic schools were they otherwise the same.

Comparison of the first and third columns of table 3.5.7 show that blacks with an average background are, at all but the lowest income level,

TABLE 3.5.6

MEANS AND STANDARD DEVIATIONS OF VARIABLES USED IN LOGISTIC MODEL OF FACTORS AFFECTING PROBABILITY OF ENROLLMENT IN CATHOLIC SCHOOLS[a]: SPRING 1980

Variable	Total		Whites		Blacks		Hispanics	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Enrollment in Catholic school ..	.065		.071		.029		.065	
Income (000)	21.221	11.508	22.468	11.379	15.420	10.427	17.244	10.720
Mother's Education .	4.180	2.201	4.263	2.209	4.008	2.195	3.399	1.929
Mother's Expectation	.616	.486	.617	.486	.618	.486	.593	.491
Sibs	3.034	2.045	2.881	1.915	3.807	2.475	3.518	2.311
Catholic Religious Background	.325	.466	.347	.472	.089	.262	.654	.494
Northeast Region ..	.225	.418	.234	.423	.203	.402	.167	.373
Both Parents Present	.819	.385	.851	.356	.571	.495	.786	.410
8th Grade College Expectations	.532	.499	.532	.499	.554	.497	.491	.500
Typewriter	.678	.467	.719	.450	.481	.500	.575	.494
Books	.763	.425	.801	.399	.611	.487	.612	.487

---

[a] Sophomores and seniors are pooled for these estimates, which are based on the weighted sample. The means and standard deviations for each variable are calculated using all valid student responses.

TABLE 3.5.7

PREDICTED CATHOLIC SCHOOL ENROLLMENT RATES FOR WHITES, BLACKS AND HISPANICS AT DIFFERENT FAMILY INCOME LEVELS, OTHERWISE STANDARDIZED TO AVERAGE BACKGROUNDS[a]: SPRING 1980

Family Income Level	White		Black		Hispanic	
	Standardized to Average U.S. Student	Standardized to Average White Student	Standardized to Average U.S. Student	Standardized to Average Black Student	Standardized to Average U.S. Student	Standardized to Average Hispanic Student
$3,500	.021	.023	.020	.008	.010	.020
$9,500	.023	.025	.024	.009	.011	.023
$14,000	.024	.026	.027	.011	.012	.026
$18,000	.025	.028	.030	.012	.013	.028
$22,500	.027	.029	.034	.013	.015	.031
$31,500	.030	.033	.043	.017	.018	.038
$45,000	.036	.040	.062	.025	.025	.051

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[a] Predicted scores are calculated from the b coefficients given in table 3.5.5 and background variable means presented in table 3.5.6. The family income values listed in the first column above are substituted into the equation in place of the four income means shown in table 3.5.6. The totals derived by this procedure are converted to probabilities by the formula given in the footnote on page 88 above.

Compared to the actual rates presented in tables 3.5.2 through 3.5.4 and figures 3.5.1 through 3.5.4, the predicted rates shown here are substantially lower. The differences are accounted for by the fact that the average backgrounds of the different types of students are higher in the Catholic sector than in the population as a whole. Thus a student at a given level of family income with a background otherwise equal to one of the average profiles shown in table 3.5.6 is less likely than average to enroll in a Catholic school, and the predicted rates given by the logistic model reflect this lower probability. The difference between the population average and the Catholic sector average background is largest for the Catholic religion variable (see table 3.3.1), and this variable is the strongest predictor of Catholic school enrollment, as Table 3.5.5 indicates. The absolute magnitudes of the predicted rates, of course, are not the focus of the analysis presented in tables 3.5.5 through 3.5.7, but rather the relative enrollment rates of different groups.

more likely than whites to be enrolled in Catholic school. Blacks with a family income of $3,500 and a background that is average in the other measured respects are about equally as likely as whites to be in Catholic school.The percentage differences between blacks and whites steadily increase across the income levels so that at the highest level ($45,000) blacks are 2.6 percent more likely than whites to enroll in Catholic school, other things equal. Hispanics exhibit the lowest enrollment rates of the three groups. But because the coefficient for income is larger for Hispanics than for whites, Hispanic enrollment rates increase with rising income more than for whites.

The second set of estimates addresses a somewhat different question than the first. Here we ask about the effects of income on Catholic school enrollment for the average members of each of the racial and ethnic subpopulations. Thus instead of standardizing the logit equation to the background of the average U.S. high school student, we now standardize the equation separately for the backgrounds of the average white, black, and Hispanic student. The average values of the background variables for each of the three subpopulations are given in table 3.5.6.

The results of carrying out these standardizations are found in the second, fourth, and sixth columns of table 3.5.6. Compared to the first set of standardizations, the proportions of whites and Hispanics at each income level are larger. The difference is more pronounced for Hispanics. reflecting the fact that Hispanics are about twice as likely as the average U.S. student to have a Catholic religious background. The predicted enrollments of blacks at each income level, in contrast, decline sharply from what was predicted for blacks with an average U.S. student background. This is in large part a reflection of the fact that blacks are far less likely to have a Catholic religious background than the average student.

To summarize the results of this section, the analysis has pointed to a number of factors related to private school enrollment. The examination has focussed on the Catholic sector, since the High School and Beyond data are more complete for this part of private secondary schooling. Not surprisingly, the analysis has shown that family income bears a strong relationship with private school enrollment. Perhaps contrary to "common sense," however, is the finding that this relationship does not appear to be reducible to the social status differences that tend to follow economic differences. The multivariate analysis provides strong evidence that the availability of economic resources exerts a significant independent effect on Catholic school enrollment. In sum, it appears that an interest in the alternative to public education that private school particularly of the Catholic type, represents is present across income levels.

By one commonly voiced view, the interest in the private alternative is explained by a desire on the parts of some groups to avoid having their children attend schools with students of other backgrounds. This segregative intention is most frequently identified with whites vis-a-vis minorities. But this chapter has shown that, at least in the Catholic schools, minorities are enrolled at non-trivial rates. Moreover, these minorities tend to be more evenly distributed, or less segregated in private than in public schools. Finally, the present section has shown that, other things equal, blacks are more likely to enroll in Catholic school than whites. The significance of this fact is heightened when one considers the relative absence of tradition for this pattern, except in the South. The data presented here strongly suggest that such a tradition is developing rapidly; blacks with the same means to do so enroll in Catholic schools at rates that are generally higher than rates for other groups, and this is true regardless of religious and other measured aspects of family background. In light of these findings, any global characterization of private schools as racially segregative is ill found.

CHAPTER 4

SCHOOL RESOURCES

The physical and human resources available in a school constitute the boundaries of opportunity for students within that school. Only, for instance, if calculus is taught at a school should one anticipate that students at that school may master certain mathematical principles. By school resources, then, we refer to course offerings provided to students, physical facilities available to students, special and federally funded programs, and the quantity, quality, and breadth of teaching and professional support personnel.

The debate concerning the relative merits of private and public secondary schools incorporates some presumed resource differences between these two sectors. For example, some argue that public schools, because of their size and school district linkages, can provide a wider range of course offerings to students. And also, because of size, they will provide a broader range more efficiently. Others have argued that the limitations of private schools in this area are more than compensated for by the greater attention that students receive in the private sector. This chapter provides information relevant to this aspect of the public-versus-private debate.

In comparing school resources, we include the two special subgroups of schools referred to in chapter 1, high-performance public schools and high-performance private schools. Although the selection of these schools was based not on representativeness but on the proportion of high-performing seniors, the resources available to students in them show something about what exists in public and private schools where academic performance is especially high. For simplicity of exposition, we sometimes refer to these subgroups of schools as "sectors," but when we speak of the "three school sectors," the reference is always to the public, Catholic, and other private sectors.

The school questionnaire provides information on a number of resources provided by the school, but our analysis will be limited in certain areas. The most important omission is the general level of expenditure at schools. Principals were informed that they need not respond to an item about per-pupil expenditure if they had recently provided this information in an NCES survey. Since this information had been provided by many schools in the preceding year, the item remained unanswered for a large number of schools. Until the data from these earlier surveys are added, per-pupil expenditure is unavailable for analysis.

For certain resources (those that varied according to school enrollment), two tables will be presented: one that reports the percentage of schools within each sector having a particular resource and one that reports the percentage of sophomore students within each sector attending a school where a particular resource exists (referred to as student accessibility).[1] This manner of presentation allows examination of

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[1] To determine the percentage of sophomores in each sector having access to the course the response on each item was weighted by the sum of sophomore weights attached to that school. These weighted responses were then summed for each sector to determine the percentage of sophomores having access to each resource. The proportion of sophomores in the total student population represented by a given school is slightly different from the proportion of seniors, primarily because of differential dropout between the sophomore and senior years. However, in the analysis we assume that this weighted sophomore estimate is sufficiently close to that for the high school student body as a whole that we can simply make reference to "students" within various sectors.

Obviously, our term "access" cannot be strictly correct for those courses with prerequisites. A student must have had second-year both the resource variability among sectors and, through a comparison of the two tables, the extent to which certain resources are disproportionately found at larger schools. Most of the analysis, however, focuses on the accessibility of various resources within each sector.

4.1 Course Offerings

Table 4.1.1 shows the percentage of schools within each sector offering a selected sample of academic, technical, and vocational courses. The items were taken from a larger list in the school questionnaire (see appendix B). The percentage of students within each type of school having access to these courses is reported in table 4.1.1. Our examination will begin with mathematics and science, those courses presumed to be the most demanding, as well as especially important to the successful pursuit of many branches of postsecondary education.

4.1.1 Mathematics and science courses

Nationally, nearly all schools offer algebra 2 and geometry (95 to 100 percent). A smaller percentage of schools offer trigonometry (76 percent) and calculus (47 percent), but table 4.1.2 shows that student access to these subjects is better than these percentages suggest: 84 percent of students have access to trigonometry and 63 percent to calculus. However, variations do exist among sectors for some mathematics and science course offerings. For example, nearly all students in high-performance public and private schools have access to a calculus course, as compared with 62 percent in public schools, 71 percent in Catholic schools, and 61 percent in other private schools. For the country as a whole, nearly all students have access to physics and chemistry (96

French to be eligible for (and therefore have access to) third-year French. The use of the term "access" has been chosen, then, to reduce the degree of convolution necessary to communicate the variation among sectors from the student's perspective.

TABLE 4.1.1

PERCENT OF PUBLIC AND PRIVATE SCHOOLS OFFERING SPECIFIC COURSES: SPRING 1980

Course	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Total number of schools	20,316	15,766	1,571	2,966	12	11
Mathematics:						
Geometry	97	96	100	95	100	100
Algebra 2	96	97	98	95	100	100
Trigonometry[a]	76	76	91	69	96	70
Calculus	47	47	60	38	94	100
Science:						
Chemistry	94	96	100	79	100	100
Physics	89	90	95	79	100	100
Language:						
3rd Year Spanish	45	46	86	19	100	60
3rd Year French	39	39	76	22	81	100
3rd Year German	20	20	27	16	76	40
Other:						
Auto Mechanics	41	50	8	12	68	10
Driver Training	82	89	63	52	81	20
Economics	63	63	71	58	80	90
Ethnic or Black Studies	16	16	16	12	41	20
Family Life or Sex Education	65	69	63	45	66	30
Home Economics	84	97	50	33	100	10
Psychology	59	58	56	66	89	80
Wood or Machine Shop	74	89	4	32	100	50

[a] Possible error: may underestimate coverage of topic. Trigonometry may be incorporated into another subject, such as analytical geometry, and not reported here.

TABLE 4.1.2

PERCENT OF SOPHOMORE STUDENTS IN PUBLIC AND PRIVATE SCHOOLS ATTENDING SCHOOLS WHERE SPECIFIC COURSES ARE OFFERED: SPRING 1980

Course	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Mathematics:						
Geometry	99	99	100	98	100	100
Algebra 2	98	98	97	98	100	100
Trigonometry[a]	84	84	91	90	93	74
Calculus	63	62	71	61	94	100
Science:						
Chemistry	98	98	100	92	100	100
Physics	96	96	96	91	100	100
Language:						
3rd Year Spanish	72	72	94	44	100	68
3rd Year French	65	64	82	48	91	100
3rd Year German	39	40	40	31	82	44
Other:						
Auto Mechanics	61	66	11	18	65	14
Driver Training	86	87	68	74	78	25
Economics	72	71	79	73	79	85
Ethnic or Black Studies	28	29	17	9	45	25
Family Life or Sex Education	76	76	67	67	79	32
Home Economics	93	96	61	45	100	11
Psychology	71	71	72	69	88	82
Wood or Machine Shop	87	94	9	50	100	47

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[a] Possible error: may underestimate coverage of subject. Trigonometry may be incorporated into another subject, such as analytical geometry, and not reported here.

percent and 98 percent, respectively) and there are only slight differences among sectors. In every sector, over 90 percent of the students have access to these basic science courses.

Thus, there is only one substantial difference in science and mathematics course accessibility among these sectors--calculus--and it arises in the high-performance schools, in both the public and private sectors. Among the three sectors, Catholic schools show slightly higher accessibility rates for science and mathematics courses than do public or other private schools.

4.1.2 Language courses

Language course offerings, in addition to their presumed value in augmenting one's mastery of English, provide the skills relevant to several dimensions of adult life. For instance, German has traditionally been considered the second language of serious academic pursuits, French the language of culture, and Spanish the practical language of American citizens. Although one should be quite cautious in making inferences from such a typology, it may provide some orientation to the differences in language learning opportunities among public, Catholic, and other private schools.

In order to assess the degree to which students have an opportunity to acquire mastery of these languages, school administrators were asked to report whether their schools offered third-year Spanish, French, and German. Nationally, 45 percent of the schools offer third-year Spanish, 39 percent third-year French, and 20 percent third-year German. Overall, this shows very little attention to foreign languages in an era in which there is more international mobility and communication than ever before.

But the different sectors vary considerably in their offerings. Among the three sectors, Catholic schools show the most extensive language offerings: more than three quarters offer third-year French and even more offer third-year Spanish; less than half of the public schools and less than a quarter of the other private schools offer these courses. In all three sectors, only about a quarter or less of schools offer third-year German. Both public and private high-performance schools have more extensive language offerings than the schools in any of the three major sectors, but German is available less often than the other two languages even in these schools.

Student access to these courses provides a different view on the question, revealing more clearly the differences in opportunities among the sectors. The other private and public sectors show the largest shift, indicating the great variation in language course offerings between large and small schools in these two sectors. In general, it is in the smaller schools that these courses are not offered, so that the percentage of students having access to the courses is greater than the percentage of schools offering them.

In addition to the variation in language course offerings with school size in the public and other private sectors, patterns not shown in the tables appear noteworthy. Third-year courses in one language appear to be offered at the expense of similarly advanced courses in other languages in both the public and other private sectors. Moreover, 73 percent of the other private schools offer no third-year language courses, leaving 44 percent of the students without access to any third-year language. In contrast, the majority of Catholic schools offer third-year courses for at least two languages.

Returning to the initial typology, it can be said that both Catholic and public schools emphasize Spanish, "the practical language;" that Catholic schools, as well as the high-performance schools, tend to emphasize French, "the language of culture;" and that high-performance public schools provide German, "the language of scholarship," more often than any other type of school. In summary, there are two major generalizations: German is least often available in all sectors; and students in the other private sector are least likely to have access to a third year of study in each of the languages.

4.1.3 Social studies courses

In the area of social studies, four courses are available for analysis: economics, ethnic or black studies, family life or sex education, and psychology. We will simply attempt to highlight some of the initial findings here. Extra caution should be taken in the interpretation of accessibility to these courses, since the subject-matter boundaries are more fluid than any of those we have yet considered.

Economics and psychology are available to comparable proportions of students: between 69 percent and 88 percent of the students in each of the sectors have access to these courses. Ethnic or black studies are available to substantially fewer students in any sector. The greatest accessibility is found in the public sector, where 29 percent of the students in public schools as a whole and 45 percent in the high-performance schools attend a school where such a course is offered. Lowest accessibility to such courses is found in the other private schools. Family life or sex education courses are available to the majority of students in all sectors (except the high-performance private). Again, the greatest accessibility to these courses is found in the public sector.

4.1.4 Technical, vocational, and practical courses

The last series of courses we will consider are those that are technical, vocational, or practical in nature: auto mechanics, wood or machine shop, driver training, and home economics. Here there are extensive differences between the public and private sectors. In the public sector, well over half (66 percent) of the students have access to an auto mechanics course, 94 percent to a wood or machine shop course, 87 percent to a driver's training course, and 96 percent to a home economics course. Only in the case of driver's training are any of the private sectors close to comparability, although home economics is available to about half the students in private schools. The lowest accessibility to technical or vocational courses is to be found in the Catholic sector, where wood or machine shop courses and courses in auto mechanics are each available to only about 10 percent of the students.

It is in this area of technical and vocational courses that high-performance private and public schools differ the most in course offerings. Well over half of the students in the high-performance public schools have access to these courses, whereas less than half of those in high-performance private schools have such access. This suggests the difference in character of these two sets of high-performance schools: the public schools are large and comprehensive; the smaller private schools, specializing as college preparatory schools, seldom offer the more practical courses.

More generally, students in public schools have much greater access to technical and vocational courses than those in private schools. (The degree to which access translates into utilization will be examined in chapter 5.) Although we cannot investigate the sources of these differences in course offerings, one possible source can be suggested. Technical and vocational courses are more costly than others. The low availability of these courses in Catholic and other private schools may be due in part to their cost relative to their perceived value by parents.

4.2 Staffing Patterns

Staffing patterns represent the varying capacities of schools to foster intellectual and emotional growth for students and to provide an environment in which these can take place. To assess the degree to which private and public schools differ in their staffing patterns, and thereby in their capacities to provide resources for intellectual and emotional growth, we report simple student-to-staff ratios within each sector.[1]

As the first line of table 4.2.1 shows, Catholic and public schools have much larger ratios of students to staff members than do other private schools. Catholic and public schools have a student-professional staff ratio of 16 and 15 respectively; the other private schools have, on average, 8 students for each full-time professional staff person.

Nearly all of this difference is attributable, of course, to the student-teacher ratio, shown in line 2 of the table. Among the three sectors, Catholic schools have the highest student-teacher ratio (18), followed closely by public schools, while the other private schools have less than half as many students per teacher. Comparison of the

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[1] The formula used in calculating these ratios is shown at the bottom of table 4.2.1.

TABLE 4.2.1

STAFFING RATIOS FOR PUBLIC AND PRIVATE SCHOOLS: SPRING 1980
($\bar{X}$ number of students per staff type[a])

Staff	Major Sectors			High-Performance Schools	
	Public	Catholic	Other Private	Public	Private
Total number of schools	16,051	1,572	3,123	12	11
Mean enrollment	757	546	153	1,386	310
General professional staff:					
Overall ratio	15	16	8	15	7
A. Teachers	16	18	7	18	8
B. Assistant Principals, Deans	503	410	120	433	163
C. Counselors	323	235	55	284	182
D. Librarians and Media Specialists	597	340	212	696	163
E. Remedial Specialists	504	891	382	563	0
F. Psychologists	2,025	4,579	1,177	2,064	1,033
Other staff:					
A. Teacher aides	349	2,549	124	380	1,033
B. Volunteers	839	385	101	312	344
C. Security Guards	1,824	17,055	780	1,868	1,395

[a] $\text{Ratio} = \dfrac{\text{weighted enrollment}}{\text{weighted number of full-time equilivant staff}}$.

high-performance schools shows the same public-private difference, with the private schools having less than half as many students per teacher.

Other staffing ratios associated with intellectual stimulation and growth include those for librarians and media specialists, remedial specialists, and teacher aides. Among the three sectors, the greatest difference in these staffing patterns is the smaller number of students per remedial specialist and teacher aide in other private schools. It is possible that the low ratio of students to remedial specialists reflects the higher incidence of special education schools in the other private sector (as shown in table 2.2.2). High-performance private schools provide the greatest number of librarians and media specialists. Of course, some of this variation is attributable to school size (to be discussed later).

In the areas of emotional growth and control of the school environment, we look at three student-to-staff ratios: assistant principals and deans, counselors, and security guards. Again, among the three major sectors the other private schools have the lowest student-to-staff ratios. Of particular note is the low student-to-counselor ratio in the other-private schools (55, as compared with 323 in the public schools and 235 in Catholic schools). Catholic schools show the highest student-to-security-guard ratio, indicating that there are very few Catholic schools with security guards. The ratio of full-time security guards to schools is approximately 1 for every 2.4 public schools, 1 for every 31 Catholic schools, and 1 for every 5 other private schools.

Finally, it is interesting to note the incidence of volunteers within each school type. Volunteers, relative to student enrollment, provide the least service to public schools, where there is on the average 1 full-time volunteer for every 839 students. By contrast, other private schools have the greatest intensity of volunteer service--approximately 1 full-time volunteer for every 100 students.

These comparisions on staffing patterns can be misleading, given the different sizes of the schools in each sector. That the public schools tend to be large and the other private schools very small means that if there were 1 staff member per 757 students in both of these sectors there would be 1 per school in the public sector and only 1 for every 5 schools in the other private sector. Thus, the ratios of students to remedial specialists of 382 to 1 in the other private sector and 504 to 1 in the public sector work out to be 1.5 per school in the public sector, but only 0.4 per school in the other private sector. And although the number of students per assistant principal and dean is only 120 in other private schools compared to 503 in public schools, this means 1.3 per school in the other private sector and 1.5 per school in the public sector.

In addition to the quantity of personnel available to students, the quality or training of personnel is also relevant to a student's intellectual growth. The proportion of teachers holding master's or doctor's degrees is one indicator of staff quality. The three sectors do not differ markedly in the proportion of teachers holding advanced degrees (not shown in the table): the average public school has 39 percent of its teachers holding master's or doctor's degrees, the average Catholic school 42 percent, and the average other private school 34 percent. The high-performance schools, however, do differ from the others in this respect. In the public high-performance schools, 67 percent of the teachers hold advanced degrees, and in the private high-performance schools 54 percent hold advanced degrees.

Regarding staff resources, then, one can draw several conclusions. There is a striking contrast between the student-teacher ratios in the public and Catholic schools and that in the other private schools. For specialized staff, the comparison is more difficult: the student-staff ratios are in many cases lower in the other private schools, but the fact that the other private schools tend to be small means that there are fewer of them with at least one such specialist than there are public or Catholic schools. The three sectors are similar in the proportions of their teaching staff with advanced degrees, but high-performance public and private schools have higher percentages of teachers with advanced degrees.

4.3 Special Programs

Financial resources translate not only into staff and curriculum, but also into programs serving the special needs and interests of students. Table 4.3.1 shows for each sector the percentages of students having access to selected special programs. We examine three classes of special programs: alternative credit programs, programs for the talented, and programs for students with special interests or needs. A note of caution is important at the outset. We do not mean to imply that either availability of a wide range of special programs or availability of a wide range of diverse courses is necessarily beneficial for a high school curriculum. Some in fact, argue the opposite. The derogatory term, "course proliferation," has been used to refer to the introduction (particularly in the 1960s and 1970s) of new courses which, it is argued, diluted and made less demanding the school's curriculum.

Alternative means of earning high school credits provide students with a broader set of learning-experience options. This survey inquired about three alternative means: work experience or occupational training

TABLE 4.3.1

PERCENT OF SOPHOMORES IN PUBLIC AND PRIVATE SCHOOLS HAVING ACCESS TO SELECTED SPECIAL PROGRAMS: SPRING 1980[a]

Program	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Work experience or occupational training credit	83	88	42	30	89	25
Credit by contract	30	31	24	18	50	11
Travel for credit	13	13	14	8	56	24
College board advanced placement courses	47	47	49	42	85	100
Program for gifted or talented	56	58	37	36	56	73
Bilingual program	28	31	5	6	50	0
Alternative school program	47	51	8	11	50	0
Program for pregnant girls or mothers	41	43	22	15	24	0
Student exchange program	55	57	37	44	67	78

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[a] Sophomore access was calculated by weighting the school response by the sum of sophomore weights in that school. These weighted responses were then summed for each sector to determine the proportions of sophomores in a given sector having access to a program. (See footnote on p. 4-2 for further discussion.)

credit, travel for credit, and credit by contract. Public and private schools differ most in the proportion of students having access to work experience or occupational training credit: 88 percent of the students in public schools have access to this alternative means of earning credit, compared with 42 percent in Catholic schools and 30 percent in other private schools. Substantially fewer students in all types of schools have access to travel for credit or credit by contract. Nationally, 13 percent of all schools have travel for credit, and 30 percent have credit-by-contract programs. Travel for credit is more often found in high-performance schools, both public and private. Credit by contract, while in evidence within all school types, is more often available to public school students.

Programs oriented toward high-achieving students are available in all types of schools with a few substantial, but not surprising, differences. Programs for the gifted or talented appear in relatively low proportions in all but the high-performance schools. The similarity among the public, Catholic, and other private sectors is greatest in the area of college board advanced placement courses (between 42 and 49 percent of the students in each of these sectors have access to such courses) and this similarity is in sharp contrast to the high-performance public and private schools, where nearly all students have access.

Programs for students with special needs or interests include bilingual programs, alternative-school programs, programs for pregnant girls, and student-exchange programs. Generally, more public schools than private schools have these programs. In particular, bilingual programs are offered with substantially greater frequency in public schools. Approximately a third of the students in all public schools have access to such a program, as do half the students in high-performance public schools.

Alternative-school programs and those for pregnant girls appear most frequently in public schools. Alternative schools began in the 1960s outside the public school system, and table 2.2.2 showed that in the total universe of schools there is a higher percentage of alternative schools in some types of private schools than in the public sector. However, this question asked about alternative programs in the school. Although very few public schools are alternative schools (1.4 percent; table 2.2.2), many have alternative-school program for a subset of students within the school. It is this which accounts for the relatively high percentages for public schools in table 4.3.1.

The major differences among the three sectors in the availability of special programs appear to be two: first, public schools have more programs emphasizing concrete career preparatory experience; second, public schools have on the whole more of the special programs discussed than does either of the private sectors.

4.4 Physical Facilities

The physical facilities of a school do more than provide space for traditional classroom activity. For instance, subject-area resource centers may provide a way for students to pursue the activity of learning more informally, student lounges and cafeterias provide arenas for student culture to emerge, and areas allocated for remedial assistance provide space for specialized equipment and resources.

Table 4.4.1 shows the frequency with which various facilities are available to students in each sector. The accessibility of career-related facilities in the public sector points again to its stronger orientation toward career preparation: 85 percent of the public school

TABLE 4.4.1

PERCENT OF SOPHOMORES IN PUBLIC AND PRIVATE SCHOOLS HAVING ACCESS TO CERTAIN PHYSICAL FACILITIES: SPRING 1980[a]

Facility	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Subject area resource center (not library)	26	25	42	27	56	70
Career information center	85	85	92	51	89	49
Occupational training center	27	30	1	0	18	0
Remedial reading or mathematics laboratory	67	69	50	27	69	11
Media production facilities	56	56	51	53	51	64
Indoor lounge	22	21	26	63	45	93
Cafeteria	96	97	92	82	100	82

[a] Sophomore access was calculated by weighting the school response by the sum of the weights in that school. These weighted responses were then summed for each sector to determine the proportions of sophomores in a given sector having access to each facility. (See footnote on p. 4-2 for further discussion.)

students attend a school where there is a career information center, and 30 percent attend a school where there is an occupational training center. Only Catholic schools exceed public schools in the availability of career information centers.

The provision of special laboratories for remedial reading and mathematics work are most in evidence in public schools: about two-thirds of the students in this sector are in schools with at least one of these facilities. In the Catholic sector, about half of the students are in schools with such a laboratory, while only 27 percent of the students in the other private sector are in schools with such a laboratory.

Over half of the students in every school type attend schools with media production facilities. Without greater detail on their utilization and capacities, few inferences can be made. One can assume at minimum, however, that these facilities make a wider variety of instructional materials available, including both educational video programs and educational programs originally prepared for commercial or public television.

Among the three major sectors, student lounges appear most frequently in other private schools, and almost all high-performance-private schools have student lounges. It is possible that the small enrollments of other private schools makes it more feasible to provide this facility. Nearly all schools of all types have student cafeterias.

This comparison of facilities points again to the general similarities between Catholic and public schools as compared to the other private schools. These measures of physical facilities are of course superficial; a comprehensive comparison of physical facilities in different sectors would require a different sort of survey.

4.5 Federal Programs

One set of resources for which we expect to find differences between public and private schools is federally financed programs. For instance, given that many of the federal funds under the Elementary and Secondary Education Act (ESEA) are targeted to groups with special needs, we might expect private schools to participate less frequently. Yet private schools are eligible for Federal funds, and some participate in Federal programs. It is instructive, in this context, to review the current participation in Federal programs of public and private schools.

Federal programs for education maintain certain eligibility criteria for schools, usually compensatory or vocational in nature, which may limit the number of schools eligible for funding.[1] Also, in some areas funding is not automatic, but depends on proposals from the school or school district, and schools differ in their initiative in obtaining Federal funds. The differences in federally funded programs at different schools are a result of both of these factors, as well as, in some cases, impediments to private school participation introduced by the state or local education agency.[1]

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[1] Eligibility for funding under these Federal programs differs somewhat for public and private schools. ESEA Title I funds are allocated through state education agencies to local educational agencies (LEAs). Although private schools that meet the Title I criteria are eligible, participation depends upon arrangements with the LEA. Probably in part as a result of the method of allocation, private secondary institutions seldom participate in Title I programs. For this and some of the other Federal programs, some of the positive responses by school administrators may be in error. Funds authorized by Titles IVB, IVC, IVD, VII, and IX in ESEA explicitly permit funding to private secondary schools, provided, of course, that other eligibility and use criteria are met. Federal legislation also permits Vocational Education Act (VEA) funds to be given to private secondary schools, but it appears that most state plans for VEA funds do not include private secondary schools. (See The Condition of Vocational Education 1980 or Galladay and Wulfsberg 1980.)

Guidelines for Talent Search and Upward Bound programs indicate that this money goes almost exclusively to higher education institutions, with high school students participating individually in the programs. Comprehensive Employment and Training Act (CETA) programs are administered by the Department of Labor, and the prime sponsor is ordinarily not an educational institution. Thus, high school students participate in these three programs, while high schools themselves do not.

ESEA provides a broad range of resources and program opportunities to school districts and schools. While eligibility varies among programs, private schools participate in most of the ESEA programs that the survey covers. (In not all cases does a positive response by a school administrator mean that a school participates as a school. The question was worded so that a positive response could mean participation in the program by some students in the school.) The participation rate of private schools is highest in the library program (Title IVB), in which nearly all of the Catholic schools, 43 percent of the other private schools, and 50 percent of the high-performance private schools participate (see table 4.5.1). Catholic schools participate in this program at a higher rate than public schools. In other ESEA programs, considered all together, Catholic schools generally participate less than public schools, but their participation is not neglible; other private schools participate hardly at all.

Among vocationally oriented programs, the differential participation of public schools is even more evident. Participation in the programs associated with CETA and VEA is almost exclusively in public schools. Catholic schools show low participation rates, and other private schools participate almost not at all. At the other extreme, high-performance

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[1] For discussion of the status of Federal programs in private schools, see Summary and Evaluation Report and How to Service Students with Federal Education Program Benefits, both published in 1980 under the auspices of the Technical Assistance Institutes at the National Catholic Educational Association.

TABLE 4.5.1

PERCENT OF PUBLIC AND PRIVATE SCHOOLS REPORTING THAT THE SCHOOL OR ITS STUDENTS PARTICIPATED IN SELECTED FEDERAL PROGRAMS: SPRING 1980

Program	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Elementary & Secondary Education Act (ESEA):						
Title I: Economic disadvantaged ..	56	69	24	1	21	20
IVB: Library	81	86	99	43	76	50
IVC: Educational innovation ..	31	38	22	0	42	20
IVD: Supplementary centers ...	22	23	31	12	17	0
VII: Bilingual education	10	12	0	4	33	0
IX: Ethnic heritage series ..	7	8	13	0	4	0
Vocational Education Act 63 (VEA):						
Consumer and homemaking	60	77	8	1	69	0
Basic program	53	67	5	1	20	0
Persons with special needs	38	48	5	1	80	0
Cooperative education	45	55	14	6	91	0
High school work study	44	55	6	6	94	0
Comprehensive Employment and Training Act (CETA)	65	81	17	5	84	0
Upward Bound	17	21	8	2	23	10
Talent Search	13	16	4	1	1	20

[a] Participation is usually by school for ESEA and VEA programs; the remaining programs generally involve student-level participation at the secondary level.

public schools show almost universal participation in Federal work programs (Cooperative Education and Work Study).

In general, federally funded vocationally oriented programs are largely the domain of public schools. In ESEA programs, Catholic schools participate at levels comparable to schools in the public sector for some titles, while other private schools seldom participate, except in the library program.

4.6 Conclusion

A number of patterns distinguishing the school resources of the different sectors can be seen in the variations shown in this chapter.

First, there is the effect of size differences, which lead the other private schools, smallest in size on the average, and, to a lesser extent, the Catholic schools to have a narrower range of courses than do the public schools, to have special programs less often, and to have fewer physical facilities (such as remedial reading laboratories).

Second, there is a difference in orientation, which means that the courses and programs less frequently found in private schools are of certain types: vocational and technical courses, work-related programs, and, in general, nonacademic courses and programs. The one traditional academic area in which courses are least often found in other private schools is foreign languages. Other differences in orientation are found in the high-performance schools. These schools, public and private, differ from other schools in more uniformly providing advanced academic resources. The high-performance schools differ from one another, however, in the context in which these resources are offered: the high-performance private schools are more narrowly specialized in academic directions, while their public-sector counterparts superimpose the more advanced academic courses and programs on an even more comprehensive range of courses and programs than is found in the public sector as a whole.

Third, the other private schools have a much lower student-teacher ratio than the public and Catholic schools. The other private schools operate with many fewer students per teacher than do the public or Catholic schools--a difference so strong that the low student-teacher ratio might be considered a hallmark characteristic of non-Catholic private schools. The low ratio probably arises in part from the small size of the other private schools and in part from conscious policy.

Fourth, private schools overall show lower participation in federally funded programs, but this is selective, with Catholic schools participating as frequently as public schools in a few of the programs.

CHAPTER 5

THE FUNCTIONING OF PUBLIC AND PRIVATE SCHOOLS

The functioning of a school depends both on its student resources and on its own resources (of the sort examined in the preceding chapter). In ways that neither educators nor sociologists understand perfectly, and in which the accident of specific personalities plays some role, the various components result in a school that functions in a particular way. In this chapter we examine that functioning, in sufficient depth to see some of the similarities and differences between the way schools in the different sectors function.

The functioning of these types of schools will be examined in five areas:

1. Student coursework
2. Levels of participation in extracurricular activities
3. The standards of discipline set by the school
4. Student behavior, including involvement in schoolwork and discipline-related behavior
5. Student attitudes

The last two aspects, behavior and attitudes on the part of students, could be treated equally well as outcomes of schooling in the next chapter. Student responses about their interest and involvement in school, the behavior that causes disciplinary problems in the school, and the attitudes they hold all play a part in the functioning of the school, but they are in part shaped by the school as well. Thus their inclusion in this chapter rather than the next is somewhat arbitrary. Because we examine these behaviors and attitudes solely descriptively, as aspects of the functioning of each type of school, the question of just how much the type of school is responsible for these differences in behavior and attitudes remains unanswered. In chapter 7, we return to differences in behavior and discipline and provide some answers to this question.

5.1 Student Coursework

Chapter 4 reported the courses and programs offered in each school sector, but it showed only student access, not exposure to coursework of different kinds. This section examines what courses students say they will take or have taken. Several items in the student questionnaire provide information about this.

One question asked sophomores the number of semesters in major subject-matter areas they had taken in the 10th grade (YB006); another item asked them to report the number of semesters in these same areas they planned to take in grades 11 and 12 (YB009). A similar question asked seniors about the semesters of coursework they had taken in grades 10, 11, and 12 in the same subjects. By combining sophomores' responses to the two questions, the plans of sophomores can be compared to the actions of seniors. This is done in table 5.1.1, which shows the average number of semesters planned by sophomores and taken by seniors in grades 10, 11, and 12. These three years translate into six semesters of coursework, and the table shows two semesters for each year of coursework, four semesters for two years, and six semesters for three years. The total number of semesters taken in a subject can exceed six, however, because students can enroll in more than one course in a subject per semester.

TABLE 5.1.1

AVERAGE NUMBER OF SEMESTERS IN VARIOUS SUBJECTS, PLANNED BY SOPHOMORES AND TAKEN BY SENIORS, IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Subject	Major Sectors						High-Performance Schools			
	Public		Catholic		Other Private		Public		Private	
	Grade		Grade		Grade		Grade		Grade	
	10	12	10	12	10	12	10	12	10	12
Average total	23.2	24.6	25.6	26.5	24.1	25.9	27.2	27.0	25.8	27.1
Mathematics	4.0	4.0	4.9	4.9	4.5	4.7	5.1	4.9	5.6	6.0
Science	3.3	3.4	4.1	4.0	4.0	4.0	4.4	4.6	4.6	4.9
English	5.3	5.8	5.7	6.2	5.4	6.1	5.7	6.0	5.8	6.2
History	4.0	4.6	4.3	4.9	4.2	4.7	4.5	4.8	3.9	4.6
Spanish	1.0	0.9	1.9	1.8	1.3	1.4	1.7	1.6	1.3	1.8
French	0.6	0.5	1.1	1.0	1.4	1.4	1.3	1.2	2.7	2.2
German	0.2	0.2	0.2	0.2	0.3	0.4	0.5	0.4	0.5	0.4
Business	1.7	2.1	1.5	2.1	1.2	1.5	1.3	1.6	0.3	0.3
Trade, Technical	1.7	1.8	0.7	0.5	0.8	0.8	1.4	1.2	0.6	0.4
Other vocational	1.4	1.3	1.2	0.9	1.1	0.9	1.2	0.8	0.6	0.3

The table shows interesting comparisons among types of schools, among subjects, and between sophomores' plans and seniors' actions. What is perhaps most striking is the similarity of the sophomores' plans to what the seniors have actually taken. Overall, there are small differences between the two in both directions, but the only uniform increases among all sectors are in English, history, and business courses, and the only uniform decrease is in "other vocational" courses. Thus sophomores seem to know with reasonable accuracy what they will take in the next two years--assuming, of course, that the sophomores will in two years show a profile similar to that of 1980 seniors.

Not shown in the table are the variabilities in sophomore expectations and senior realizations. For the academic subjects, the variation among seniors in what they have actually taken is less than the variation among sophomores in what they think they will take. That is, while the averages of sophomore expectations about the number of semesters of each of these academic subjects they will take are accurate, there are more extremes in the expectations of sophomores than in the actions of seniors. The reverse is true for the nonacademic subjects (business courses, trade, technical, and other vocational courses). For these courses, in the public schools (and to a lesser extent in the private schools) the seniors are more extreme in the amount of coursework they have completed than are the sophomores in their expectations. This, of course, has to do with the way high schools are structured, with academic subjects more or less standard fare for all students (though at differing levels of difficulty), and vocational courses taken primarily by those students who go into (or are directed toward) a vocational program. Some students who will never take a technical or vocational course expect to take a few such courses, while others who will end up taking many of these courses underestimate that number as sophomores.

Table 5.1.1 also allows comparison of sectors according to the average amount of coursework completed in academic and nonacademic courses. The average amount of academic coursework completed by public school seniors provides a basis for comparing students in other sectors. On the average, these students complete, over grades 10, 11, and 12, two years of mathematics, one and a half years of science, two and a half years of history, three years of English, and one and a half years in all foreign languages taken together. Of course, this list does not include all academic coursework, but it does sketch out the exposure of U.S. public high school students to basic academic courses.

Students in the private sector vary somewhat from this modal picture. On the average, students in Catholic schools and other private schools take three more semesters of academic coursework (the first three groups of courses in table 5.1.1) than do students in public schools. A similar difference is found between high-performance private and public schools (although students in the latter schools take slightly more academic coursework than do students in the Catholic or other private sectors). Considering each academic subject separately, the differences among the public, Catholic, and other private sectors are rather small. The students in high-performance private schools stand out sharply in mathematics and French: the average senior completes more than a semester of mathematics and of French beyond that completed by students in other sectors.

The differences between the public and private sectors are reversed for business, trade, technical, and other vocational courses.

These courses are less frequently taken by private school students, with the differences especially great for the high-performance private schools.

Among the foreign languages, German has nearly vanished as a subject studied by students in all types of schools. French is also infrequently taken in the public schools, but it remains the dominant language in the high-performance private schools, and occupies an equal position with Spanish in the non-Catholic private schools.

Altogether, the comparison of specific subjects taken in public and private schools indicates no sharp divergence between the two. Perhaps the greatest areas of divergence are foreign languages, of which the private school students take more, and nonacademic occupational courses, of which the public school students take more. Other than this, one can say only that the private school students take, on the average, slightly more courses, and that these are generally in academic subjects.

Looking at specific academic courses, such as calculus or physics, however, there are some great differences between the types of schools. Seniors were asked about each of nine academic courses: four mathematics courses, two science courses, and third-year courses in each of three foreign languages. Table 5.1.2 shows the percentage of seniors in each school type taking these courses. Within each area, the courses are ordered by the percentage of students taking each.

In mathematics courses, ranging from geometry to calculus, about half to two-thirds as many public school students take these courses as do Catholic or other private school students. Comparing Catholic schools with other private schools in each of the mathematics courses, a slightly higher percentage of Catholic school students than of other

TABLE 5.1.2

PERCENT OF SENIORS IN PUBLIC AND PRIVATE SCHOOLS REPORTING THEY HAVE COMPLETED SELECTED ACADEMIC COURSES: SPRING, 1980

Course	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Geometry	56	53	84	77	87	100
Algebra 2	49	42	70	66	76	99
Trigonometry	24	22	44	42	57	70
Calculus	6	6	11	10	22	63
Chemistry	38	37	53	51	68	79
Physics	20	18	23	28	46	67
3rd Year Spanish	4	3	7	8	11	11
3rd Year French	3	2	6	10	8	18
3rd Year German	1	1	1	2	5	2

private school students take these courses. An exceptionally high proportion of students in high-performance private schools take these advanced mathematics courses, with 63 percent taking calculus, the most advanced. The percentages for the high-performance public schools lie between those of the private sector as a whole and those of the high-performance private schools. Generally, the more advanced the course, the smaller the ratio of public school enrollment to private school enrollment.

Neither of the two science courses, chemistry and physics, is taken by a large proportion of students, except in the high-performance schools. Chemistry is taken less often in all types of schools than algebra 2, but more often than trigonometry. Physics is taken less, only about half as often as chemistry (except in the high-performance schools). It is taken by fewer students than take trigonometry, but by more than take calculus. In these sciences, the public schools are somewhat closer to the private schools than is true for mathematics.

The third year of a foreign language is taken by only a small minority in any type of school. We have no direct comparisons with earlier cohorts or other developed countries, but both of these comparisons would undoubtedly emphasize the relative lack of advanced foreign language training among contemporary American high school students, in public and private schools. In the public schools, attended by about 90 percent of the students, the highest enrollment for a third-year language course is 3 percent, in Spanish. The percentage of students in public schools enrolled in any third year language course is 6 percent, compared with 14 percent in Catholic schools, and 20 percent in other private schools. It is not the case that the lower percentage of students taking each of these courses in the public schools is due to lack of opportunity. Table 4.1.2 in the preceding chapter showed that the percentage of private school students in schools where such a course is available is smaller than, or at most equal to, the percentage of public school students in such schools. That is, these courses are generally more available in the public sector, but are taken by fewer students.

If we look at the percentages of students in those schools where the course is available who take the course, the differences in table 5.1.2 are slightly magnified. Table 5.1.3 shows these percentages, and the differences between public and private are slightly greater. This is of course due, at least in part, to the small sizes of private schools. In such schools, the percentage of students interested in a given course must be fairly high for the absolute number to be great enough to warrant the teaching of the course. Thus in the smallest schools, the other private schools, the percentages taking a course where it is offered tend to be especially high.

The public-private school differences are, however, reduced if, in the schools where the courses are offered, we look only at those students who say they expect to get a 4-year college degree (BB065). Table 5.1.4 shows these comparisons. The course profiles in mathematics and physics in public schools are much closer to those in Catholic and other private schools. In languages, however, the differences between the other private schools on the one hand and public and Catholic schools on the other remain great.

Thus altogether, comparing coursework taken in the public and private schools, we can say that a superficial look at the number of semesters in general subjects shows a great similarity between public and private; but, when we examine specific advanced courses in these schools, a far greater percentage of private school students take these

TABLE 5.1.3

PERCENT OF SENIORS IN PUBLIC AND PRIVATE SCHOOLS WHERE SELECTED ACADEMIC COURSES ARE OFFERED WHO HAVE TAKEN THESE COURSES: SPRING 1980

Course	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Geometry	57.3	54.4	84.5	79.0	86.1	99.8
Algebra 2	50.2	47.8	72.3	67.1	75.5	98.8
Trigonometry	28.0	25.5	48.1	46.8	52.5	94.2
Calculus	10.4	9.5	14.7	24.6	23.5	62.2
Chemistry	39.2	37.6	52.8	54.6	68.5	78.9
Physics	21.3	20.4	24.4	30.6	45.8	66.6
3rd Year Spanish	5.0	4.4	7.5	16.7	11.5	17.2
3rd Year French	3.8	3.1	6.4	18.9	9.5	20.8
3rd Year German	2.3	2.2	1.2	7.0	5.3	4.5

TABLE 5.1.4

PERCENT OF SENIORS IN PUBLIC AND PRIVATE SCHOOLS EXPECTING TO FINISH 4-YEAR COLLEGE WHO HAVE TAKEN SELECTED ACADEMIC COURSES WHERE THESE COURSES ARE OFFERED: SPRING 1980

Course	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Geometry	82.1	80.1	94.3	90.5	94.2	99.8
Algebra 2	74.4	73.0	83.6	81.4	86.4	98.8
Trigonometry	49.6	47.3	62.9	59.5	67.1	94.5
Calculus	19.7	18.7	20.8	33.1	29.9	63.5
Chemistry	63.0	62.3	67.0	66.7	79.8	79.6
Physics	35.4	35.2	34.0	40.0	58.4	66.9
3rd Year Spanish	7.7	7.1	8.4	19.9	13.6	14.2
3rd Year French	6.6	5.6	8.7	23.4	12.1	21.1
3rd Year German	3.5	3.4	1.9	7.1	5.0	4.6

courses. If we control for students' higher education plans, these differences are reduced, and, presumably, statistical controls on family background would reduce the differences even more. Thus, while the student bodies of public and private schools as a whole differ considerably in their taking of these advanced courses, students with similar college plans (and similar in other respects) have similar course profiles. This leaves open, of course, the question whether these college plans are brought to the school wholly from the outside or are in part generated by the different school environments. We examine that question in section 6.2.

5.2 Extracurricular Activities

Along with the courses that students take in each of these types of schools, they participate in extracurricular activities. And, because the schools are organized quite differently, we might expect the extracurricular activity profiles of students to differ according to the type of school they attend. Table 5.2.1 shows the percentage of students in each sector participating in each of thirteen types of school activities listed in the student questionnaire (BB032). The activities are grouped into four loosely homogeneous areas.

First of all, it is useful to note that there are few major differences between the participation profiles of sophomores and seniors. The only major difference in the public schools is the 10 percent increase in senior participation in vocational education clubs. Among the smaller differences, however, some are consistent across sectors. Band and orchestra participation appears to decline slightly, as does participation in subject matter clubs. In contrast, participation in hobby clubs appears to increase slightly. In addition, cheerleading seems to increase

TABLE 5.2.1

PERCENT OF SOPHOMORES AND SENIORS IN PUBLIC AND PRIVATE SCHOOLS PARTICIPATING IN VARIOUS EXTRACURRICULAR ACTIVITIES: SPRING 1980

Activity	Major Sectors						High-Performance Schools			
	Public		Catholic		Other Private		Public		Private	
	Grade		Grade		Grade		Grade		Grade	
	10	12	10	12	10	12	10	12	10	12
Varsity athletics (Seniors only)	NA[a]	35	NA	37	NA	58	NA	39	NA	73
Athletics (soph) or other athletics (seniors)	53	41	62	47	69	55	20	26	84	65
Cheerleading & pepclub	14	15	16	15	13	17	17	13	11	17
Debate, drama	10	14	14	18	18	33	18	15	24	36
Chorus, dance	22	21	23	20	28	31	20	19	24	27
Band, orchestra	17	15	10	9	15	14	18	15	11	12
Subject matter clubs.	26	24	28	25	27	25	24	21	30	23
Vocational education clubs	15	25	4	7	7	9	6	8	3	0
Hobby clubs	21	23	21	22	24	27	21	26	34	43
Honorary Society ..	NA	17	NA	20	NA	17	NA	17	NA	13
School newspaper ..	NA	18	NA	28	NA	45	NA	24	NA	57
Student government .	NA	18	NA	20	NA	30	NA	19	NA	29

[a] NA = not applicable; sophomores not asked about participation.

(the athletics questions are not quite comparable at the sophomore and senior levels, and cannot be directly compared), as does participation in debate or drama. Participation in chorus or dance appears to decline slightly in the public and Catholic schools, but to increase in the other private and high-performance private schools.

Among school sectors, the public schools and the Catholic schools seem similar, and slightly different from the other private schools. The high-performance private schools differ from public and Catholic in the same direction as all of the other private schools, but more emphatically. The principal difference between the public and Catholic schools on the one hand and the other private and high-performance private on the other is that in the latter, participation in a number of activities appears to grow over time, with seniors participating more than sophomores. In the public and Catholic schools, this growth is less frequent. The differences between school types at the senior level in the last two activities, school newspaper and student government, suggest that the same generalization would hold for these activities if they had been included at the sophomore level.

Regardless of the reason, the end result is that participation in extracurricular activities in the other private and high-performance private schools, which is similar to that in public and Catholic schools at the sophomore level, is somewhat higher by the senior year. This can be seen in a slightly different way by looking at two measures of sophomore-senior differences for the seven activities that are directly comparable (3 through 9 in table 5.2.1): the number of activities in which seniors show a higher participation rate than sophomores, and the sum of senior-sophomore difference in percentage participating.

TABLE 5.2.2

DIFFERENCES IN SOPHOMORE AND SENIOR PARTICIPATION IN EXTRACURRICULAR ACTIVITIES IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Differences	Major Sectors			High-Performance Schools	
	Public	Catholic	Other Private	Public	Private
Sum of senior-sophomore differences	12	0	24	-7	21
Fraction of activities in which senior participation is higher	4/7	3/7	5/7	2/7	5/7

These are shown in table 5.2.2. The table shows that, by both measures, the other private and high-performance private schools are distinguishable from the other types of schools. Participation grows over time in these schools, but declines or grows less in the others.

One might conjecture that extracurricular activities are organized differently in the Catholic and public schools than in the other private schools. In particular, there are two approaches a school may take to the organization of extracurricular activities. One is a selective orientation, which recruits younger students into, say, less selective choruses, with subsequent narrowing down for the more selective chorus, or into junior varsity athletics with only the best going on to the varsity. Another approach, the intramural orientation, holds to the philosophy that everyone ought to try everything. This latter approach may be seen in elite English schools that aspire to develop a "well-rounded" individual.

If the public and Catholic schools have the selective orientation to extracurricular activities, and the other private schools more often have the intramural orientation, this would explain the participation decline from sophomore to senior in public and Catholic schools and the growth (or at least the absence of decline) in the other private schools.

5.3 Disciplinary Standards

Discipline in schools is regarded by many as the most important problem in American education. In a yearly Gallup Poll concerning education, the general public has for a number of years ranked discipline as the most important problem in schools. And superintendents, principals, and teachers complain bitterly about constraints on them, legal and otherwise, which they regard as preventing them from imposing and maintaining order in their schools.

Discipline is also one of the areas in which public and private schools are believed to differ most. Catholic schools in particular are frequently regarded as highly disciplined in comparison with public schools. It is of special interest, then, to see the similarities and differences in disciplinary standards and in student behavior in public schools and the private school sectors. In this section we examine disciplinary standards; in the next (section 5.4) we examine student behavior.

Several questions were asked, in the school questionnaire and the student questionnaire, about rules and enforcement of rules. Table 5.3.1 shows how the responses to two of those questions compare for the different sectors, and how the students' and administrators' responses compare.

There is not a great difference among the sectors, according to both administrators and students, in responsibility for property damage. Virtually all administrators in all sectors indicate that students are held responsible. Sophomores' responses are also similar across types of schools, although the percentage is somewhat lower in public schools. In all sectors, a substantial minority of sophomores say no such rule is enforced. The difference between administrators and students, of course, might be in interpretation of what "enforced" means: for some of the students, enforced might include finding the student who is responsible, and their responses may reflect the opinion that the student is often not found. The difference between administrators and sophomores is greatest in the public schools and least in

TABLE 5.3.1

PERCENT OF SOPHOMORES AND ADMINISTRATORS REPORTING THAT CERTAIN RULES ARE ENFORCED AT THEIR SCHOOL: SPRING 1980

Item and Group	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Students responsible to school for property damage						
Sophomores	65	64	77	71	66	71
Administrators	97	96	95	100	100	100
Rules about student dress						
Sophomores	46	42	97	69	14	93
Administrators	58	51	100	70	44	90

the Catholic schools, consistent with the general perception that discipline is most fully enforced in Catholic schools and least fully enforced in public schools.

Rules about student dress distinguish the sectors sharply--and there is little disagreement between sophomores and administrators. In virtually all of the Catholic schools, about two-thirds of the other private schools, and perhaps half of the public schools there are enforced rules about student dress. Thus the greater strictness of the Catholic schools, as well as the intermediate position of the other private schools, is evident in this area.

Table 5.3.2 shows responses of seniors and sophomores to general questions about the effectiveness and the fairness of discipline in the school (BB053F and G). Among the three sectors, students in Catholic schools are the most likely to rate their school as "excellent" or "good" in effectiveness of discipline, and public school students are least likely to do so. On fairness of discipline, again the private schools are more often rated by their students as good or excellent than are the public schools; but this time the Catholic schools and the other private schools are approximately alike. It is in effectiveness of discipline, as perceived by their students, that the private schools (and especially the Catholic schools) depart most sharply from the public schools.

The two sets of high-performance schools differ sharply on both of these dimensions of discipline. The high-performance private schools are the highest of all sectors in both dimensions, while the high-performance public schools are hardly distinguishable from the public schools as a whole.

TABLE 5.3.2

PERCENT OF SOPHOMORES AND SENIORS IN PUBLIC AND PRIVATE SCHOOLS RATING THEIR SCHOOLS' EFFECTIVENESS AND FAIRNESS OF DISCIPLINE AS "EXCELLENT" OR "GOOD": SPRING 1980

Class	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Effectiveness of discipline:						
Seniors	44	42	72	58	52	79
Sophomores	44	41	76	65	40	79
Fairness of discipline:						
Seniors	37	36	47	46	40	62
Sophomores	40	39	52	50	41	68

The lower rating of public schools by their students in fairness of discipline is somewhat ironic. In the past decade and a half, legal strictures to insure fairness of discipline, such as requirements for due process before suspension, elaborate review processes, and statistical comparisons of disciplinary actions by race to insure racial fairness, have been imposed by the courts or the Federal government on public schools. These strictures are much less fully imposed on private schools (in part, of course, simply because attendance at these schools is by choice rather than assignment). Yet it is the private schools, less bound by the strictures designed to insure fairness, that are more often regarded as fair by their students. This suggests that the legalistic approach to insuring fairness in discipline may be less effective than other approaches in bringing about fairness--and the upper panel of the table suggests that it may indeed be counterproductive for effectiveness of discipline. Of course, the effectiveness of discipline is also dependent on other factors. In particular, private schools have more control over the entrance and exit of their students than do public schools.

One other question somewhat related to the disciplinary climate of a school asked the students about teachers' interest in students. The responses to that question are shown in table 5.3.3. The table shows that among the three sectors it is the teachers in other private schools who are most often regarded as interested in their students. Teachers in the public schools are by far the least often seen as interested in students. Again, the high-performance private schools are highest in perceived interest of teachers, while the high-performance public schools are similar to the public schools as a whole. Here, and to a lesser degree in other aspects of discipline, the smaller average

TABLE 5.3.3

PERCENT OF SOPHOMORES AND SENIORS IN PUBLIC AND PRIVATE SCHOOLS RATING THEIR TEACHERS' INTEREST IN STUDENTS AS "EXCELLENT": SPRING 1980

Class	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Seniors	14	12	25	41	15	64
Sophomores	11	9	25	34	16	55

size of the private schools (and especially the other private schools) may be responsible for some part of the differences.

Another way to examine the difference in disciplinary standards in each type of school is to aggregate the student response in each school and then compare the school averages and ranges within each sector. This procedure gives us a way to compare general school climates among sectors. Such an aggregation of responses was done for the discipline and climate items discussed previously--teacher interest in students, effectiveness of discipline, and fairness of discipline--as well as for an item on school spirit (BB053H). The responses were aggregated across both grades, and the school was characterized according to the average student response. Figure 5.3.1 shows the mean of the school rating for each sector, and an indication of the range obtained by adding and subtracting two standard deviations. (About 5 percent of schools would fall outside of two standard deviations.) Thus, one can compare both the average school climate for each sector, and the degree of similiarity for schools within each sector (the range).

Two general differences in range hold across at least three of the four measures: the very broad distributions among the other private schools, and the tight distributions of high-performance private and public schools. The breadth of the distributions for the other private schools implies that these schools differ considerably among themselves in fairness and effectiveness of discipline. For instance, although they are higher than the public schools in average perceived fairness, a few are seen as worse than nearly any public school in fairness of discipline. Teacher interest in other private schools shows a similarly broad distribution. Finally, there is high variability

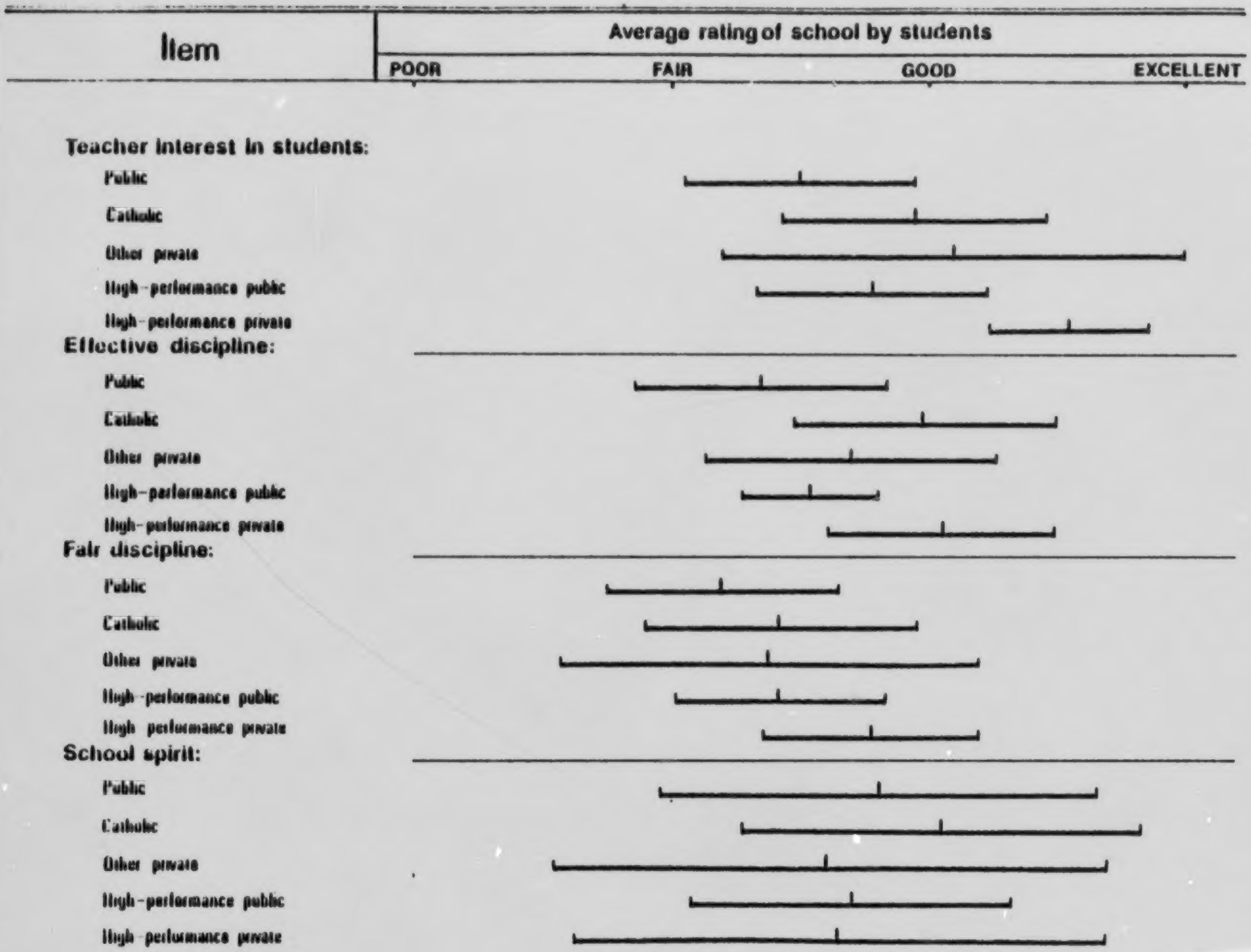

Fig. 5.3.1. School aggregate ratings of discipline, teacher interest, and school spirit by students in the public and private sectors: average and range within each school sector: Spring 1980.

in school discipline climates in other private schools, and high consistency among both public and private high-performance schools.[1]

Looking at central tendencies, which tell us about the average school within each type, the high-performance private schools are highest in teacher interest, effectiveness of discipline, and fairness of discipline, and low only in school spirit (though they show a wide range). Conversely, the public schools are lowest in teacher interest and in effective and fair discipline; in school spirit they are relatively high, exceeded only by the Catholic schools. High-performance public schools tend to be rated slightly higher on these dimensions of school environment than the public schools, except in school spirit.

Comparing Catholic and other private schools, the Catholic schools are higher in effectiveness of discipline and in school spirit, the other private schools are higher in teacher interest, and the two are about equal in fairness of discipline.

These results at the school level are consistent with the individual-level results, except that the inclusion of the range of schools within each of the sectors on measures of discipline reveals the great variation within the other private schools.

Altogether, the indicators of disciplinary standards and disciplinary climate indicate that the standard stereotypes are by and large true. The Catholic schools are strictest in discipline; the other private schools are somewhat less strict and appear to be more nurturant (as evidenced by perceived teacher interest). The public schools, taken as a whole, are neither strict nor nurturant. In addition, they are least often regarded by their students as fair in their exercise of discipline.

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[1] Some part of the variability in all sectors is due to sampling variability, since only a sample of students in each grade level was included in the study. For most sectors, this sampling variability is small, since, if all sampled students responded, the school average is based on seventy-two student responses. But some schools, especially in the other private sector, were so small that the total of the sophomore and senior classes was considerably below seventy-two. Thus a part of the broader variability for other private schools is due to this sampling variability.

5.4 Student Behavior

In this section we compare the obverse of disciplinary standards, that is, student behavior in different sectors, including involvement in school, attendance, tardiness, and cutting classes. Student behavior is in part the consequence of the way a school is organized and administered and in part the cause. We know that students attend school with different degrees of regularity, making teaching more or less difficult; that students spend varying amounts of time on homework; and that, when in school, students exhibit differing degrees of behavior problems. The question of interest here is just how the various sectors of education compare in student behavior.

5.4.1 Involvement in school

Involvement in school is one aspect of student behavior. There are several measures of this in the student questionnaires. One is the amount of time spent on homework (BB015); a second is the true-false response to a statement that the student is interested in school (BB059C); a third is another true-false response to a statement that the student likes to work hard in school (BB061E).

The average amount of time spent on homework differs considerably among the sectors. The averages for sophomores are: less than four hours a week in the public schools; over five and one-half in Catholic schools, other private schools, and high-performance public schools; and over nine hours in the high-performance private schools. Again, the other private schools show a greater diversity than the Catholic schools, with more students at each extreme. Most homogeneous are high-performance private schools, where nearly all of the sophomores spend over three hours and almost half spend over ten hours (table 5.4.1).

Seniors spend less time on homework than do sophomores, except in the high-performance private and public schools, where slightly more time is spent, on the average. From this evidence, seniors appear slightly less involved in schoolwork than are sophomores. One other point from the table is noteworthy: In both the Catholic schools and the high-performance private schools, no sophomore, and almost no senior, reports not having homework assigned; in the public schools, 2.4 percent of sophomores and 4 percent of seniors report that none is assigned.

Although watching television is not part of school functioning, it stands as a kind of alternative time expenditure for high school students, and it is useful to see how students from the different types of schools balance their time between television and homework. Table 5.4.2 shows the amount of time spent on watching television by all students in a week, and these results can be compared to the amount of time spent on homework. Comparison of tables 5.4.1 and 5.4.2 reveals that the lesser time spent on homework by the average public school student is matched by a greater amount of time spent in watching television. Because of the different time categories used for the two items, and because of a general normative pressure to overreport time spent in homework and underreport time spent watching television, the absolute numbers of hours in the two activities cannot be directly compared.

TABLE 5.4.1

AVERAGE TIME SPENT ON HOMEWORK BY SOPHOMORES AND SENIORS IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Time on Homework	U.S. Total		Major Sectors						High-Performance Schools			
			Public		Catholic		Other Private		Public		Private	
	Grade		Grade						Grade			
	10	12	10	12	10	12	10	12	10	12	10	12
No homework assigned	2.3	3.6	2.4	4.0	0.0	0.6	1.7	1.0	1.3	0.7	0.0	0.0
None	4.5	4.0	4.7	4.2	2.3	2.3	2.4	3.8	2.2	2.3	0.6	1.9
Less than 1 hour/week	14.1	16.3	14.9	17.1	6.3	9.9	6.3	8.0	7.5	8.0	0.9	2.2
One to three hours	28.3	30.3	29.2	31.2	20.3	24.8	17.6	17.8	16.3	19.5	3.5	4.5
Three to five hours	24.0	21.3	24.0	21.0	24.9	25.1	22.5	22.8	23.2	22.8	12.0	6.8
Five to ten hours	20.5	18.0	19.4	17.0	32.8	27.1	29.8	27.3	36.8	27.2	35.2	29.0
More than ten	6.4	6.4	5.4	5.6	13.3	10.2	19.8	19.3	12.7	19.6	47.9	55.6
Average[a]	3.9	3.7	3.7	3.5	5.6	4.9	6.0	5.8	5.6	5.7	9.1	9.5

[a] Calculated by assigning 0.5, 2.0, 4.0, 7.5, and 12.5 to the last five categories in the table, and 0 to the first two.

TABLE 5.4.2

AVERAGE TIME SPENT WATCHING TELEVISION BY SOPHOMORES AND SENIORS IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Number of hours per week	U.S. Total		Major Sectors						High-Performance Schools			
			Public		Catholic		Other Private		Public		Private	
	Grade				Grade				Grade			
	10	12	10	12	10	12	10	12	10	12	10	12
None	2.6	3.6	2.4	3.4	2.8	4.0	7.6	9.7	4.0	4.1	7.6	11.0
Less than one hour	6.5	10.9	6.0	10.5	8.3	11.5	17.3	18.8	11.6	17.3	24.7	25.2
One to two hours	13.2	18.0	12.9	17.7	16.4	21.2	15.6	21.6	20.3	23.6	28.2	24.7
Two to three hours	19.5	22.1	19.6	22.2	20.4	23.8	16.1	18.0	24.4	23.2	16.8	20.7
Three to four hours	18.0	17.3	18.0	17.4	18.7	17.5	18.3	13.3	14.2	15.6	9.7	8.2
Four to five hours	12.8	11.0	13.0	11.3	12.3	9.1	8.3	7.1	8.7	6.8	4.3	3.3
Five or more hours	27.4	17.1	28.1	17.6	21.3	13.0	18.8	11.4	18.8	9.5	8.6	7.0
Mean[a]	4.1	3.3	4.2	3.4	3.7	3.0	3.2	2.6	3.2	2.6	2.2	2.0

[a] Calculated by assigning 0.5, 1.5, 2.5, 3.5, 4.5, and 8.0 to the last six categories, and 0 to the first two.

But the direction of the differences among the sectors is exactly reversed for television watching and for homework. The public school students are lowest in homework, highest in television watching; the students in high-performance private schools are highest in homework, lowest in television. These two time expenditure reports suggest the differing levels of demands imposed on students in the different types of schools.

In addition to comparisons by school type, comparison of seniors and sophomores is of interest. Seniors watch less television than sophomores and are also less occupied by homework. A greater amount of their attention than that of sophomores is devoted to activities other than either schoolwork or television. Another report from this study (Lewin-Epstein 1981) shows that a major area of activity for many youth is employment.

Student reports of interest in school and liking to work hard in school give another perspective on the capacity of these schools as constituted to capture the attention of their students (see table 5.4.3). These items, however, show considerably fewer differences among students by sector than does the item concerning time spent on homework. It is true that fewer of the students in public schools and more of the students in high-performance private schools report being interested, but the differences between the public and private schools as a whole are very small. The same can be said for responses to the question about liking to work hard: there are only small differences among the schools, and the public schools are not consistently the lowest.

In general, for both of these questions, the seniors show, as already suggested by their spending less time on homework, slightly less interest in school than do the sophomores. Thus, again, there

TABLE 5.4.3

PERCENTAGE DISTRIBUTIONS IN PUBLIC AND PRIVATE SCHOOLS OF STUDENTS INTERESTED IN SCHOOL AND OF STUDENTS LIKING TO WORK HARD IN SCHOOL: SPRING 1980

Item	U.S. Total		Major Sectors						High-Performance Schools			
			Public		Catholic		Other Private		Public		Private	
	Grade		Grade						Grade			
	10	12	10	12	10	12	10	12	10	12	10	12
Interested in school?												
Yes	76.4	73.7	76.2	73.2	78.7	76.3	78.1	82.1	80.9	76.1	88.4	88.7
No	23.6	26.3	23.8	26.8	21.3	23.7	21.9	12.9	19.1	23.9	12.6	11.3
Like working hard in school?												
Yes	54.0	52.3	54.0	52.2	52.8	52.3	56.4	54.2	53.8	57.8	63.6	56.7
No	46.0	47.7	46.0	47.8	47.2	47.7	43.6	45.8	46.2	42.2	36.4	43.3

is indication that in all sectors the interest and involvement of seniors in high school is somewhat lower than that of sophomores.

5.4.2 School attendance

Another area of student behavior is attendance. We look at three potential problems in this area: absence from school for reasons other than illness, class cutting, and tardiness. Student behavior along these lines differs according to type of school. Table 5.4.4 shows that the school sectors are ordered alike for all of these types of behavior and for both seniors and sophomores: students in Catholic schools show the highest consistency of attendance, students in other private schools are next, and students in public schools are lowest. Curiously, students in high-performance public schools have the poorest attendance records.

This table includes, in addition, evidence that seniors are less well disciplined in attendance than are sophomores. In all types of schools, and by all three measures, seniors show less consistency in their attendance at school than do sophomores. This is especially noteworthy because the seniors are a more select group, excluding those students--on the whole, less well disciplined--who have dropped out between the sophomore and senior years. Thus there is further indication that seniors are less involved in high school than are sophomores.

5.4.3 Reports about discipline from administrators and students

In addition to these reports by students concerning their own behavior, there is information about the school's behavioral climate from two other sources: the school questionnaire included questions (SB056), answered by the school's administrative staff, about the seriousness of various types of behavioral problems among students; and

TABLE 5.4.4

PERCENT OF SOPHOMORES AND SENIORS IN PUBLIC AND PRIVATE SCHOOLS REPORTING GOOD ATTENDANCE PRACTICES: SPRING 1980

Attendance Item	U.S. Total		Major Sectors						High-Performance Schools			
			Public		Catholic		Other Private		Public		Private	
	Grade		Grade						Grade			
	10	12	10	12	10	12	10	12	10	12	10	12
Never absent except when ill	34.7	25.6	33.7	24.8	48.8	34.0	37.0	30.8	32.2	19.4	50.3	34.5
Never cut classes	69.9	55.2	68.6	53.6	88.7	74.6	71.0	59.3	56.8	41.6	81.4	64.4
Never late to school	42.2	36.0	42.0	35.9	47.7	41.2	35.6	28.2	33.5	32.8	40.3	28.0

sophomores were asked (YB019) about how often certain behavior problems, in some of the same areas as well as some others, arise in the school. Responses to these questions offer two additional perspectives on the school's behavioral climate. In two of the areas, student absenteeism and class cutting, it is possible to examine the same behavior from three perspectives: the students' reports of their own behavior, the school administrators' reports about what happens in the school, and the students' reports about what happens in the school. In another area, verbal abuse of teachers, it is possible to get two perspectives: reports from the administrative staff and from the students about what happens in the school.

Table 5.4.5 presents the administrators' and the sophomores' responses concerning behavioral problems, some covering the same areas of behavior. Comparing the two areas in which there are three perspectives, we find some interesting differences. First, two of the three perspectives show Catholic schools to have the best attendance and public schools to have the worst. But the perspectives differ: students' reports of their own behavior show less difference among school types than do administrators' and sophomores' reports about the school. There is a logical basis for the difference between students' reports of their own behavior and reports on a "school problem." If 5 percent of students are chronically absent in one school and 15 percent are absent in another, it is logically consistent for no one in the first school to report that this "often happens" or is a "serious problem," and for all students and administrators in the second school to report that it often happens or is a serious problem. Thus such reports on a school can logically show greater extremes than the actual behavioral averages.

TABLE 5.4.5

ASSESSMENTS OF DISCIPLINARY PROBLEMS BY ADMINISTRATORS AND STUDENTS IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Item and Group	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Student absenteeism:						
Administrators: percent reporting it is a "serious or moderate problem"	47.2	56.6	15.2	13.8	58.1	00.0
Sophomores: percent reporting "students often don't attend school"	42.9	46.2	8.1	16.1	28.2	2.8
Sophomore and senior behavior: absent 5 or more days, not ill	19.0	20.2	8.5	13.5	14.2	7.9
Cutting classes:						
Administrators: percent reporting it is a "serious or moderate problem"	29.1	37.0	4.6	00.0	39.2	00.0
Sophomores: percent reporting "students often cut classes" ...	58.4	62.4	15.9	25.9	67.0	6.5
Sophomore and senior behavior: cut classes now and then	36.8	39.0	18.4	34.3	50.7	26.7
Verbal abuse of teachers:						
Administrators: percent reporting or is a "serious or moderate problem"	8.6	9.6	4.7	5.3	22.6	00.0
Sophomores: percent reporting "students often talk back to teachers"	39.8	41.6	22.8	21.7	25.7	9.2

TABLE 5.4.5 (Continued)

Item and Group	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Fighting and disobedience:						
Sophomores: percent reporting "students often fight"	25.1	26.8	9.4	5.8	14.7	2.5
Sophomores: percent reporting "students often don't obey"	28.7	30.2	14.6	13.0	18.8	4.6
Drug and alcohol use:						
Administrators: percent reporting it is a "serious or moderate problem"	42.3	48.5	26.2	18.0	61.3	60.0
Vandalism of school property:						
Administrators: percent reporting it is a "serious or moderate problem"	21.8	24.5	13.8	11.7	27.1	20.0

Table 5.4.5 also includes data on areas of behavior not related to attendance; these have to do with disorderly and disobedient behavior while in school, and in some cases directed toward the school. The difference between public and private schools stands out just as strongly here as in attendance. The incidence of problems of all sorts is high in public schools, however reported and by whomever reported. There is, however, a reversal between the two sectors of private schools. In most of these areas of behavior--specifically verbal abuse of teachers, fighting, drug and alcohol use, and vandalism--Catholic schools show slightly higher rates of incidence than do other private schools. The students' reports and the administrators' reports are reasonably consistent in this (except that administrators report much lower levels of verbal abuse of teachers than do sophomores, suggesting that the responses of the two may be referring to somewhat different behavior--"verbal abuse" vs. "talking back"). In absenteeism and cutting classes, as indicated earlier, the other private schools are higher than the Catholic schools. It seems likely that the reason for the somewhat poorer attendance in the other private schools is that these schools are somewhat less strict about enforcement of attendance or disciplinary action for nonattendance than are Catholic schools. This conjecture is reinforced by the fact that while absenteeism and cutting classes, as reported by students of themselves and of other students, are more prevalent in other private schools than in Catholic schools, the principals less often define this as a "problem."

As indicated by earlier data, the high-performance public schools resemble the public schools as a whole more than they resemble any of the private sectors, while the high-performance private schools tend to show fewer disciplinary problems than either the Catholic or other private schools.

In one area of behavior, however, administrators in both sets of high-performance schools more often report a behavior problem than do administrators in any other sector: use of alcohol or drugs. Administrators in three-fifths of the high-performance schools report a "serious" or "moderate" problem. In the absence of further information (students were not asked about alcohol or drug use), we can merely note this.

It is possible not only to characterize each of the sectors by the distribution of student behavior, but also to characterize each school according to the level of discipline problems students see in the school. In addition to the items concerning attendance, cutting classes, and verbal abuse, sophomores were asked about three areas of student behavior problems in their school: not obeying, getting in fights, and threatening or harming teachers. For each school, the students' responses to each of these six items were averaged, so that the school is characterized by the level of discipline problems as perceived by all sophomores.

As in the analysis of disciplinary standards, where a similar aggregation was done for each sector, the results are tabulated as the mean and the range. (That is, plus and minus two standard deviations. In some cases, this exceeds the upper limits of 3.0 or goes below the lower limit of 1.0, but this can still serve as a measure of the range of schools. On the graph, the ranges are truncated at the limits.) About 5 percent of schools lie outside of a range of two standard deviations.

The results are shown in figure 5.4.1. Several general results hold over all areas of student behavior. Again, the high-performance private schools show a tight distribution, just as they did earlier, in the case of disciplinary standards. And, again, the other private

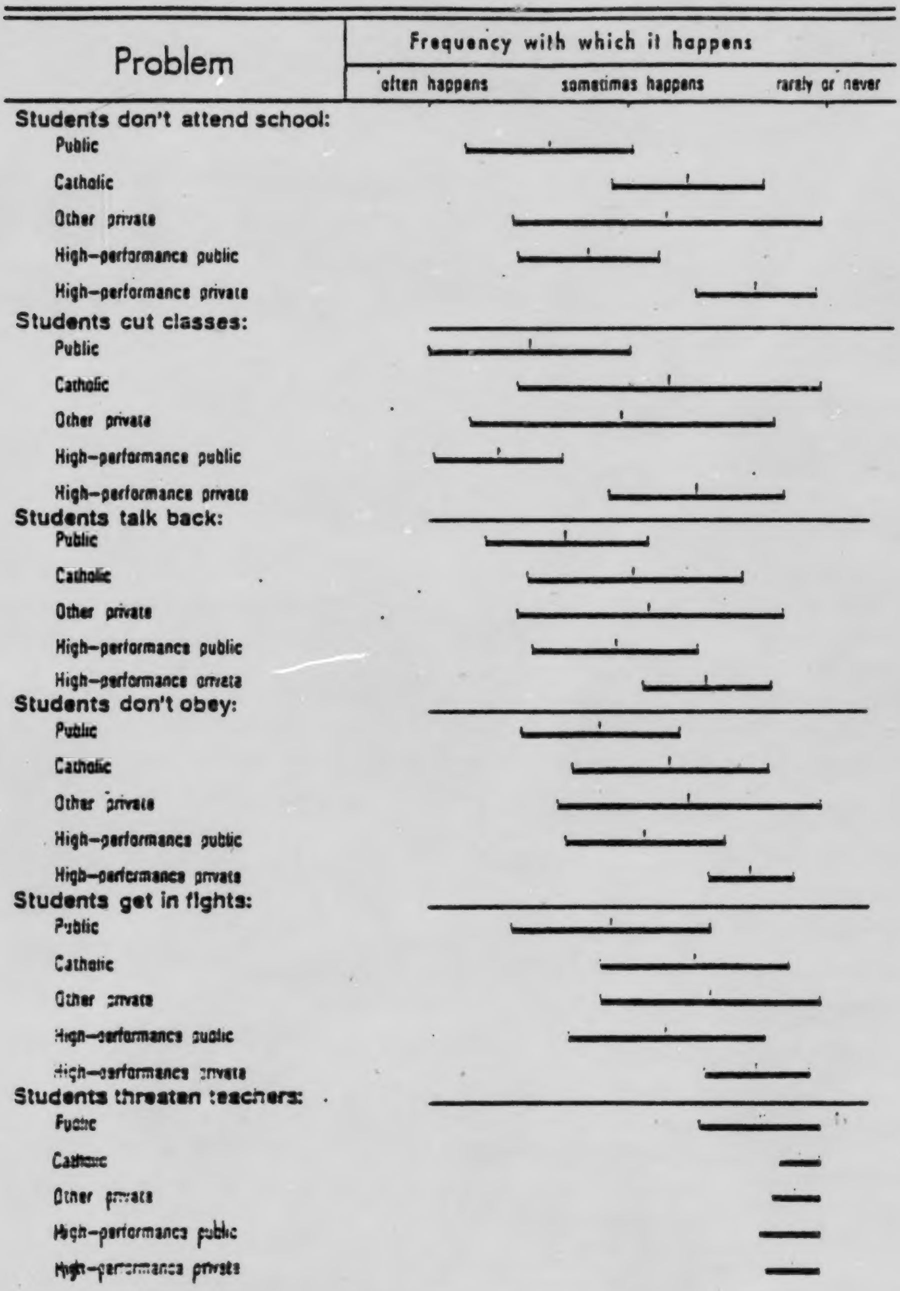

Fig. 5.4.1. School aggregate assessment of discipline problems by sophomore students in public and private schools: average and range within each school sector: Spring 1980

schools show the largest range in most areas, though in the area of threatening or attacking teachers it is only the public schools that show a range.

In all areas of behavior, without exception, the public schools have greater student behavior problems than schools in any other sector. In some areas, such as attendance, cutting classes, fighting, and threatening teachers, the average public school is outside the whole range of Catholic schools in the direction of more behavior problems (that is, at a point beyond which we would find less than 2.5 percent of the Catholic schools). The difference between the schools in these two sectors in student behavior problems is clearly very great. The difference between public schools and other private schools is also great. In every area except cutting classes and threatening teachers, the average for other private schools is beyond the range of public schools in the direction of fewer behavior problems (i.e., at a point beyond which we would find less than 2.5 percent of the public schools).

These characterizations of behavior problems in the schools show extremely great differences between the public schools and the private schools. In sum, although the distributions of schools do overlap, in some areas the majority of public schools are beyond the limits of the distribution of private schools.

5.5 Students' Attitudes

Students' attitudes toward themselves and their environments were elicited in the student questionnaire (BB058A through L). Several questions related to what is ordinarily termed "self-concept"--just how good one feels about oneself--were asked, using a five-point agree/disagree scale. Another set of questions, using the same scale, tapped what is ordinarily termed "internal control" or "fate control," that is, the degree to which one feels in control of those things one regards as important.

Through these questions it is possible to see how students in each type of school feel about themselves. Information about such feelings or attitudes gives a sense of the psychic state of a school's student body, and thus adds to our sense of just how the schools function as a social systems.

The proportion of students within each sector expressing a strong sense of fate control is shown in table 5.5.1. Six items intended to elicit these feelings are listed there. The differences among sectors are not large, but they are consistent. For nearly all items, public school students are lowest, Catholic school students and students in other private schools are next, high-performance public schools are only slightly higher, and students in high-performance private schools are somewhat higher than the rest. Averages are shown at the bottom of the table, indicating the differences. As these figures show, seniors in all types of schools have a somewhat higher belief in their control of their own fates than do sophomores, with the magnitude of the differences being about equal to that between the public and private school students at the same grade level. However, the seniors in other private and high-performance private schools exceed the sophomores in their sense of fate control somewhat more than is true in the other sectors.

A variety of experiences, both within the school and outside it, give some people more self-confidence about themselves than others. Academic achievement and leadership experience are two of the in-school

TABLE 5.5.1

PERCENT OF SOPHOMORES AND SENIORS IN PUBLIC AND PRIVATE SCHOOLS
EXPRESSING A STRONG SENSE OF FATE CONTROL: SPRING 1980

Fate Items	U.S. Total		Major Sectors						High-Performance Schools			
			Public		Catholic		Other Private		Public		Private	
	Grade				Grade				Grade			
	10	12	10	12	10	12	10	12	10	12	10	12
Good luck important (Disagree strongly)	24.8	32.4	24.4	32.0	29.9	35.6	27.4	36.8	26.6	38.8	33.2	38.2
Someone stops me (Disagree strongly)	9.6	13.8	9.3	13.4	12.6	15.8	11.3	20.1	15.5	22.5	16.4	31.8
Plans don't work out (Disagree strongly)	22.6	27.9	22.3	27.5	25.6	29.6	24.3	34.7	26.2	36.8	37.7	43.2
Should accept conditions (Disagree strongly)	9.9	16.2	9.6	15.7	12.2	19.8	12.8	23.1	14.2	21.0	22.6	33.1
What happens in my doing (Agree strongly)	19.3	22.6	19.4	22.6	18.7	21.7	17.7	24.7	19.7	18.6	16.9	32.8
My plans work out (Agree strongly)	13.6	16.5	13.7	16.5	12.4	15.7	12.5	18.8	15.5	14.9	14.4	23.4
Average	16.6	21.6	16.5	21.3	18.6	23.0	17.7	26.4	19.6	25.4	23.5	33.8

experiences that can foster the growth of self-esteem. Table 5.5.2 shows the variation in high self-esteem responses for students in various types of schools. Again, senior responses indicate higher self-esteem than do those of sophomores regardless of sector. Generally, the magnitude of the differences is approximately the same for Catholic and both types of public schools. The senior-sophomore difference is greater in the other private and high-performance private schools, as it is for fate control. Although it is beyond the scope of the present study, future researchers might want to focus attention on those characteristics in which these two sectors especially exceed the other sectors: teacher interest (table 5.3.3), involvement in extracurricular activities (table 5.2.2), and number of teachers relative to students (table 4.2.1). These factors, as well as school size, may play a role in the greater change between the sophomore and senior years in these schools.

Finally, we look at student concern for social and economic inequalities. Students were asked about the importance of a variety of factors in their lives, and "working to correct social and economic inequalities" was among the items. We report only the responses of non-Hispanic whites for two reasons. First, because we are interested in capturing a concern for the social welfare of others, we wished to look at the responses of those who are less often the victims of inequality. Second, because minority students are disproportionately represented in the public sector, their inclusion would have distorted the between-sector comparison. Table 5.5.3 shows that among the three major sectors there are only slight differences in the proportion of non-Hispanic white students who consider it "very important" to work toward correcting

TABLE 5.5.2

PERCENT OF SOPHOMORES AND SENIORS IN PUBLIC AND PRIVATE SCHOOLS GIVING HIGH SELF-ESTEEM RESPONSES: SPRING 1980

Self-Esteem Item	U.S. Total		Major Sectors						High-Performance Schools			
			Public		Catholic		Other Private		Public		Private	
	Grade		Grade						Grade			
	10	12	10	12	10	12	10	12	10	12	10	12
Take positive attitude toward myself (Agree strongly)	26.9	32.7	26.9	32.7	26.4	30.9	26.7	33.5	24.8	35.2	35.4	46.0
I'm a person of worth (Agree strongly)	26.9	33.5	26.6	33.1	29.5	36.1	29.7	38.6	35.4	36.8	41.1	55.0
Able to do things as well as others (Agree strongly)	26.7	33.6	26.5	33.5	28.3	33.3	31.2	37.4	29.0	35.2	41.0	52.4
On the whole, satisfied with myself (Agree strongly)	18.9	22.6	18.9	22.4	19.2	22.8	20.0	25.8	21.2	24.7	25.6	32.7
I'm not good at all (Disagree strongly)	11.0	14.4	11.0	14.3	10.4	14.0	10.0	15.2	7.9	13.1	13.6	20.7
Not much to be proud of (Disagree strongly)	32.6	39.9	32.3	39.4	35.5	43.9	35.0	43.9	37.8	43.6	43.9	58.7
Average	23.8	29.5	23.7	29.2	24.9	30.2	25.4	32.4	26.0	31.4	33.4	44.3

TABLE 5.5.3

PERCENTAGE DISTRIBUTION BY GRADE AND SCHOOL TYPE OF THE PERCEIVED IMPORTANCE AMONG WHITE STUDENTS OF WORKING TO CORRECT SOCIAL AND ECONOMIC INEQUALITIES: SPRING 1980

Perceived Importance	U.S. Total		Public		Catholic		Other Private		High-Performance Sector			
									Public		Private	
	10	12	10	12	10	12	10	12	10	12	10	12
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Very important	12.0	11.1	12.1	11.1	11.5	9.8	11.1	13.2	15.0	12.6	13.6	15.0
Somewhat importnat	49.6	46.5	49.6	46.8	49.3	46.0	52.1	40.5	47.3	44.9	46.0	38.2
Not important	38.4	42.4	38.4	42.1	39.2	44.2	36.8	46.3	37.7	42.5	40.4	46.8

NOTE: Details may not add to totals because of rounding.

social and economic inequalities, and in all cases the proportion is relatively small (between 9 and 13 percent). Among sophomores, public school students are slightly more concerned than students in the private sector. In both the Catholic and public sectors the proportion of seniors who consider working to correct inequalities "very important" is slightly lower than that of sophomores, while more other private seniors than sophomores consider it "very important." All of these differences, however, are quite small. Perhaps more important is the fact that for all sectors more seniors than sophomores consider this issue "not important." However, the increase in the private sector appears to be greatest, especially in the other private sector. Overall, the data suggest that among non-Hispanic white students there may be less loss of concern for social and economic inequalities in the public sector than in the private sector between the sophomore and senior years.

5.6 Conclusion

It should be said that the majority of high school students appear to enjoy working hard in school and report that they are interested in school--regardless of the type of school they attend. Also, student exposure to coursework does not differ greatly by type of school. But schools in the different sectors appear to differ sharply in some respects: the number of advanced courses students take, the number of extracurricular activities in which students participate, the discipline standards established for students, and the general behavior patterns of students.

Catholic schools are distinguished from others in the relatively tight disciplinary standards established, their reported effectiveness, and the high attendance patterns of their students. Furthermore, the reports of students in Catholic schools concerning discipline tend to accord better with principals' reports than do those of students in other types of schools. In terms of extracurricular involvement, Catholic school students appear to have experiences comparable to those of public school students.

In all of the private sectors, students take more academic subjects, and more advanced academic subjects, than students in the public sector (except for the high-performance public schools). Other private schools, as well as high-performance private schools, are distinguished by the growth in participation in extracurricular activities between the sophomore and senior years. The standards of discipline in other private schools are similar to those in the Catholic schools, though somewhat less strict, and the climate appears to involve closer teacher-student relations than in either Catholic or public schools.

Public schools, in general, are distinguished by their discipline problems, the lower average number of academic courses completed by their students, and the lower number of hours spent on homework. However, for public school students planning to complete four years of college, exposure to advanced science courses is not much below that of students in the private schools, though these students take substantially fewer advanced mathematics courses than do students in private schools.

Students in high-performance public schools are more likely to complete advanced mathematics courses than students in other private or Catholic schools, but are less likely to do so than students in high-performance private schools. Students in high-performance public schools also spend about the same amount of time on homework as do students in Catholic and other private schools. But students in high-performance public schools are distinguished by their consistently higher rate of absenteeism and class cutting. In other areas of discipline they are fairly comparable to those in other private and Catholic schools.

The types and numbers of courses students complete, as well as the disciplinary climate, appear to be important differences in the functioning of these schools. In the next chapter we discuss how these schools differ in outcomes for their students.

CHAPTER 6

OUTCOMES OF EDUCATION

Central to the assessment of any proposed policy regarding public and private schools is the outcomes of schooling for the children who pass through them. In this chapter we look at two important outcomes of schooling: achievement and plans after high school.

In assessing outcomes, however, there is not a single question but rather two major ones and several subsidiary questions. The two major questions are: "What are the outcomes from public and private schools as they currently function?" and "How would the outcomes differ for the same boy or girl when in public versus private schools?" The first serves a descriptive purpose, describing what students completing public and private schools in the U.S. are like, how they are similar and how they differ. The second, however, is more central for parents, and central to policy arguments about the relative merits of public and private schools.

The first question is simple and straightforward. It can be answered directly by comparing seniors in public and private schools on various measures: test scores, post-high-school plans, interest in school, adherence to discipline, effort expended on school work, attitudes toward oneself and others, and so on. Some of these measures, which show differences in the way the schools function, were examined in chapter 5; others which are more strictly outcomes of schooling are examined here.

The second question is more difficult. It requires an experiment that can never be perfectly carried out, but is approximated every day. What would be the difference in outcome for a given boy or girl in the different school settings? It is impossible to have the same person in two different schools, but in everyday life we observe something like this--a brother goes to a public school, while his sister goes to a private school; or two boys who have grown up as neighbors and friends are sent, one to a private school and the other to a public school.

In answering this second question, statistical controls are used as substitutes for the ideal but unattainable experiment. The quality of the answer depends on the statistical controls that are used. In attempting to answer the question, we will use a kind of triangulation, obtaining evidence through different types of analyses in order to get a more secure fix on the results.

Despite these statistical controls and the differing kinds of analysis, some measure of uncertainty must remain. This, however, is the situation with all questions of cause and effect. As in everyday life, our task will be to use the evidence at hand to cast as much light on the causal questions as possible. When the sophomores are retested two years hence, having measures at two points in time will help remove some of the uncertainty but even then uncertainty will remain.

In addition to these two major questions, there are subsidiary ones as well: What would be the outcome difference between public and private schools if some input resource other than students were the same? For example, how would public and private schools differ in outcomes if they were, on average, the same size, or if the per-pupil expenditures in each were the same? Some of these hypothetical questions are relevant to policy issues, because some policies would equalize these schools on certain resource inputs. For example, a voucher plan, such as has been proposed in California, would nearly equalize per-pupil expenditures among public and private schools in the state.[1]

Like the questions about outcomes for students who are alike, questions about outcomes when various input resources or characteristics are made alike can only be answered with uncertainty. But the answers are valuable, not only for policy purposes, but also because they give some insight into the different effects that public and private schools have on the students who attend them. They offer ideas about which policies may be valuable in both the public and private sector to increase a school's effectiveness for its students. In the next chapter we will try to address these subsidiary questions in some detail as they apply to cognitive outcomes.

6.1 Descriptive Differences in Outcomes Between Public and Private Schools

From one point of view, the products of a school are its graduates, and thus only seniors should be considered for identifying differences in these products. From another perspective, students at every stage in their schooling can be viewed as products and it would thus be reasonable to include sophomores in an investigation of performance, behavior, and attitudes. We take the second view, looking at these attributes of sophomores as well as seniors. The value of studying sophomores also lies in the fact that the sophomore year is the last for which nearly all youth in the age cohort are still in school.

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[1] This plan has been developed by John Coons, Professor of Law at the University of California, Berkeley. There was an initial attempt, later withdrawn, to put the voucher proposal on the California ballot for referendum.

6.1.1 Cognitive achievement in each sector

Tests were given to sophomores and seniors in each of the schools studied. The tests differed somewhat for sophomores and seniors, but three of the tests had a number of items in common. The vocabulary tests had eight words in common, the reading tests had eight questions in common, and the mathematics tests had eighteen items in common. The results are given separately for the sophomore tests (in table 6.1.1), for the senior tests (in table 6.1.2), and for the common subtests taken by both seniors and sophomores (in table 6.1.3).

The sophomore test scores in table 6.1.1 indicate that the average public school student scores below the average student in either the Catholic or other private schools in every area tested. Students from Catholic schools and other private schools have similar averages. The high-performance schools, both private and public, have students with the highest averages. The high-performance private schools, more selective and more homogeneous, show averages considerably above those for the high-performance public schools. These differences in average test scores and in standard deviations illustrate again the differences between the two sets of high-performance schools. The high-performance public schools are generally large upper-middle-class suburban schools with student bodies that perform well above those of the average public school, yet they contain greater diversity in performance than the high-performance private schools, as indicated by the standard deviations.

Some subject-matter variations exist between the sectors. The Catholic schools are about half a standard deviation above the public schools in vocabulary (using the U.S. total standard deviation), slightly less than half above in reading, mathematics, and writing (English composition), and about a third above in civics and science.

TABLE 6.1.1

MEANS AND STANDARD DEVIATIONS FOR SOPHOMORE TEST SCORES IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Test	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Means:						
Reading (19)[a]	9.1	8.9	10.5	10.5	11.7	14.5
Vocabulary (21)	10.9	10.7	12.9	13.1	14.1	17.6
Mathematics (38)	18.6	18.3	21.5	22.3	24.9	30.2
Science (20)	10.9	10.8	11.9	12.4	13.2	15.1
Civics (10)	5.8	5.8	6.5	6.4	7.1	7.8
Writing (17)	10.3	10.1	11.9	11.5	12.8	14.7
Standard deviations:[b]						
Reading	3.9	3.8	3.6	3.9	4.1	2.8
Vocabulary	4.4	4.3	3.9	4.5	4.2	2.6
Mathematics	7.4	7.4	6.6	7.8	7.5	4.8
Science	3.8	3.8	3.3	3.5	3.5	2.4
Civics	2.0	2.0	1.9	1.9	1.9	1.4
Writing	4.0	4.0	3.5	3.8	3.4	2.0

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[a] Numbers in parentheses refer to total number of test items.

[b] Standard deviations shown are standard deviations of individual test scores. Standard errors for sector mean achievement may be found by multiplying the standard deviations shown by the following numbers:

	U.S. Total	Public	Catholic	Other Private	High-Performance Public	High-Performance Private
Sophomores	0.006	0.006	0.019	0.044	.054	.055
Seniors	0.006	0.007	0.020	0.048	.062	.058

TABLE 6.1.2

MEANS AND STANDARD DEVIATIONS FOR SENIOR TEST SCORES IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Test	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Means:						
Reading (20)[a]	10.9	10.8	11.9	13.0	13.5	16.0
Vocabulary (27)	13.1	12.9	15.1	15.9	18.0	21.6
Mathematics (32)	19.1	18.9	21.1	22.4	23.9	28.1
Picture number (15)	11.3	11.3	12.1	11.9	11.6	13.0
Mosaic (89)	45.3	45.2	47.3	51.0	54.2	55.3
Visual (16)	7.7	7.7	7.5	8.6	8.8	9.8
Standard deviations:[b]						
Reading	4.2	4.2	3.8	4.2	4.0	2.6
Vocabulary	5.4	5.3	5.1	6.0	5.7	3.7
Mathematics	6.3	6.3	5.6	6.1	5.7	2.7
Picture number	3.7	3.7	3.3	3.5	3.5	2.8
Mosaic	14.6	14.6	12.6	14.7	16.0	14.5
Visual	3.1	3.1	3.0	3.2	3.2	3.3

[a] Numbers in parentheses refer to total number of test items.

[b] See footnote b, table 6.1.1 for calculating standard errors for sector means.

It is also useful to examine the test score standard deviations for each of the school types. When compared to the public sector, the standard deviations are smaller on every test in the Catholic sector, showing a greater homogeneity of performance among students in Catholic schools. In the other private sector, they are larger than those of public school students for about half of the twelve tests, in both grades, and smaller for about half.

The standard deviations can be thought of as test score variations consisting of two parts: the variation among students within a school, and the variation among schools within the same school sector. The public schools, Catholic schools, and other private schools differ greatly in the fraction of the variance that is between schools. Over all twelve tests in the sophomore and senior years, the fraction between schools is .11 for Catholic schools, .18 for public schools, and .28 for other private schools. This, taken together with the smaller overall variances for Catholic school students and the roughly equal overall variances for public and other private school students, means the following:

1. The school-to-school variation in average test scores is considerably less in Catholic schools than in public schools.
2. The school-to-school variation in average test scores is considerably greater in other private schools than in public schools.

The greater school-to-school variation in the other private sector shows the extreme heterogeneity among these other private schools. They include the prestigious schools that are often thought of as the private schools in America, schools that roughly coincide with membership in the National Association of Independent Schools. But they also include a wide range of church-related schools, as shown in chapter 2, some of which operate on a shoestring; and they include as well schools that have sprung up in response to school desegregation policies and other unpopular policies in the public schools. These schools vary, too, in the kinds of student served. Some children are in private schools because their parents feel the local public school offers too little challenge. But others are marginal students who are enrolled in private schools because of their poor performance in public school. Some private schools cater to low achievers, others to high. Altogether, the large variations in test scores in the "other private" sector indicates the wide range of levels at which these schools operate and the wide range of functions they serve for different types of student.

Both the lower overall variations in Catholic sector test scores and the less school-to-school variation are as one might expect. Students in these schools come from backgrounds that are more homogeneous in education and income level than those of students in either the public schools or the other private schools.[1] In addition, the schools themselves are more homogeneous, all operating under the same church, and with some common practices.

The schools that show the least variation in test scores among their students are the high-performance private schools. Because they are within the prestigious segment of the private schools they, too, draw students from rather homogeneous backgrounds. They were selected for inclusion in this study on the basis of their students' uniformly high performance on a standardized test, the National Merit Scholarship Test. On both these grounds, they can be expected to show, as they do, considerably lower variation in test score performance by their students.

In contrast, the high-performance public schools show about the same diversity of performance as do the public schools as a whole, although the average level of performance ranges from about two-thirds of a standard deviation to nearly a full standard deviation above that in the public schools as a whole.

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[1] Table 3.2.1 shows the lesser variation in income among parents of children in Catholic schools than among parents of children in other schools.

The senior test scores show a pattern similar to the sophomore tests. Again, on the six tests the public schools are lower than the Catholic and other private schools, with only one exception among the twelve comparisons between the three school sectors. The other private schools are slightly higher than the Catholic schools on five of the six tests. The high-performance public schools are (except for the picture number test) higher than the other private schools, and the high-performance private schools are in turn considerably above the high-performance public schools.

It is tempting to compare the senior and sophomore scores for the three tests with comparable content (vocabulary, reading, mathematics), to make some inference about achievement "gains" or "growth" in the two cohorts. However, this involves certain difficulties. First, the tests are not the same at the two grade levels. Secondly, the students in the two grades cannot be considered as representative samples of the same population, largely because of dropouts between the sophomore and senior years.

The first difficulty can be overcome by examining subtests containing only identical items for both years. These subtest scores are presented in table 6.1.3. The table indicates the same differences between the school sectors that were seen in tables 6.1.1 and 6.1.2. The public students' averages are lowest, Catholic school students are somewhat higher, and the other private schools are highest among the three major sectors. Students in the high-performance public schools are somewhat higher still, and the students in high-performance private schools are considerably higher than all.

When we look at differences between grades 10 and 12, with the aim of making inferences about growth in achievement over the two years, the first

TABLE 6.1.3

MEAN SCORES ON SUBTESTS THAT ARE IDENTICAL FOR SENIORS AND SOPHOMORES IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Subtest	U.S. Total		Major Sectors						High Performance Schools			
			Public		Catholic		Other Private		Public		Private	
	Grade		Grade						Grade			
	10	12	10	12	10	12	10	12	10	12	10	12
Means:												
Reading .... (8)[a]..	3.67	4.54	3.60	4.48	4.34	5.00	4.32	5.34	4.85	5.77	6.06	6.71
Vocabulary ...... (8) ..	3.78	4.58	3.69	4.48	4.59	5.35	4.78	5.56	5.11	6.24	6.65	7.22
Mathematics .....(18) ..	9.56	10.80	9.40	10.63	11.05	12.10	11.28	12.74	12.53	13.76	15.09	16.38
Standard Deviations:												
Reading	2.01	2.10	2.00	2.10	1.92	1.96	2.05	2.04	2.12	1.94	1.49	1.18
Vocabulary	1.90	1.97	1.88	1.97	1.84	1.74	2.00	1.94	1.86	1.65	1.24	.97
Mathematics	4.04	4.24	4.04	4.24	3.56	3.82	4.17	4.14	3.80	3.62	2.33	1.70

[a] Numbers in parentheses refer to total number of items on subtests.

striking point is that the growth seems rather small everywhere. Out of eight questions on reading comprehension, the average sophomore answers about four correctly, and the senior answers, on the average, less than one additional question correctly. Similarly, for the eight vocabulary items, the average sophomore answers about half correctly, while the average senior has learned less than one more. In mathematics, of the eighteen problems, the average sophomore answers only a little more than half, and the average senior only a little over one additional item.

The differences between sophomores and seniors, which could, with some caveats, be regarded as growth, appear similiar among the different sectors, except for the high-performance private schools, where growth is less in vocabulary and reading. This result for the high-performance private schools is almost certainly due to a ceiling effect. The average number correct among sophomores was only 1.9 less than the total number of items in reading and 1.3 less in vocabulary. This means that many sophomore students had all items correct: 16 percent of the sophomores in these schools had all items in the reading test correct, and 35 percent had all items in the vocabulary test correct. These students' scores could not be improved on by their senior counterparts. The only gains could come in that fraction of the student body with less-than-perfect scores, and, even then, the opportunity for gain is small, since only one or two items were missed. In the other sectors there is no strikingly different degree of growth from the sophomore to the senior year.

It might be argued that the lack of growth from the sophomore to the senior year can be explained by the fact that these tests do not cover subject matter that is an explicit part of the curriculum in the later years of high school. The mathematics items are all rather elementary, involving basic arithmetic operations, fractions, and only a few hints of algebra and geometry. Moreover, explicit attention to reading comprehension and vocabulary expansion is not part of standard curricula in the tenth through twelfth grades. Thus we would not expect the variation in intensity and scope of the academic courses taken during these years--as examined in chapter 5--to have a direct impact on the variations in the sophomore to senior test score gains. However, two or three of the tests given to sophomores (science, civics, writing composition skills) should reflect such curriculum variations when they are repeated for the sophomores two years hence.[1] Yet most of the courses that are taken in grades 10, 11, and 12 should provide the kind of practice and experience that would lead to growth greater than the one item per test. Few sophomores in public and private schools, with the exception of those in the high-performance private schools, get all items correct, so the potential for improvement at the senior year is great. Thus, the small rates of growth are surprising.

There are several difficulties in making inferences about the growth in different school sectors (or, as appears to be the case, lack of differential growth) on the basis of these comparisons. First, there may be differential growth among the sectors which occurred before the second half of grade 10. That is, the spring of 10th grade is not the entry point into high school for these students, thus differences between grades 10 and 12 capture only part of the growth that occurs during a students' high school career.

Second, these are two different cohorts of students, representing different parts of the total set of children who entered school in the first grade in their respective years. Dropping out from school, which is concentrated in the secondary grades, occurs at different rates in each of the sectors. This may result in the seniors being a differently-selected group from the sophomores. Since dropouts ordinarily perform less well on achievement tests than do those who complete high school, the senior class in a school with higher dropout rates has lost more of its low-performing members than has a senior class of a school with a lower dropout rate. (The question of differential dropout will be addressed later in this chapter.)

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[1] These tests were not given to seniors because there was a replication for seniors of the tests given to 1972 seniors, thus allowing 1972 to 1980 comparisons.

Third, quite apart from different dropout rates, the two cohorts are samples from the population of sophomores and seniors in each type of school. Thus, due to normal sampling variation, particularly in the private sectors where the samples are not large, differences can result.

Fourth, calculating average growth rates may obscure differences in growth among different segments of the student population. For example, the great diversity among the other private schools suggests that there may be high growth among some (e.g., the prestigious "independent" schools) and low growth among others. These differences would be masked by the overall 10-to-12 comparisions made in table 6.1.3.

An attempt is made, in section 6.2, to examine the question of differential growth. At this point, all that can be said is that there are differences at grade 10, which are certainly due in part to differential selection of students into different types of schools, and that similar differences are found at grade 12.

6.1.2 Post-high-school plans in each sector

Sophomores and seniors were asked about their plans after high school. One question (BB065) asked about schooling: "As things stand now, how far in school do you think you will get?" Responses from the students, by sector, varied considerably. The findings are presented in table 6.1.4.

Among sophomores, the mode was less than four years of college in the public sector, and college graduate in the Catholic and other private sector. For both the public and private high-performance schools, it was an M.A., Ph.D. or other advanced degree. Almost 30 percent of public school sophomores did not expect to go beyond high school, while 12.4 percent was the next highest percentage, among the students in other private schools. Altogether, the distributions of sophomore schooling expectations were very similar in the Catholic and other private schools.

Seniors in all sectors except Catholic schools show higher educational expectations than sophomores. The differences are not large for public school students, but are rather large for students in other private schools, and in the high-performance private schools. In both these sectors, the seniors show about a 10 percent increase in those expecting to get an M.A., Ph.D. or other advanced degree.

The immediacy and concreteness of college plans are shown by responses to a question (BB115), which asks when, if ever, the student plans to attend college (either two-year or four-year). Responses to this question are shown in table 6.1.5. As with expectations about ultimate level of schooling, there are differences in the immediacy of college plans, differences which order the sectors similarly.

Public school sophomores show the greatest percentage deferring college or being undecided, nearly 40 percent, while both the Catholic and other

TABLE 6.1.4

PERCENTAGE DISTRIBUTIONS OF EXPECTED EDUCATIONAL ATTAINMENT FOR SOPHOMORES AND SENIORS IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Expected Level	U.S. Total		Major Sectors						High-Performance Schools			
			Public		Catholic		Other Private		Public		Private	
	Grade		Grade						Grade			
	10	12	10	12	10	12	10	12	10	12	10	12
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
High school or less	26.5	19.8	28.2	21.1	9.8	8.2	12.4	8.9	8.6	4.6	1.0	1.0
More than high school but less than 4-year college.	33.0	34.6	33.5	35.6	27.2	27.3	27.3	22.1	19.0	16.1	1.3	0.6
4-year college	22.7	25.4	21.6	24.4	33.2	36.2	32.2	30.7	30.5	30.6	32.3	22.8
M.A. or Ph.D. or other advanced degree	17.8	20.1	16.6	18.8	29.8	28.2	28.2	38.3	41.9	48.7	65.4	75.6

NOTE: Details may not add to totals because of rounding.

TABLE 6.1.5

PERCENTAGE DISTRIBUTIONS FOR TIME OF ENTRY TO COLLEGE FOR SOPHOMORES AND SENIORS IN PUBLIC AND PRIVATE SCHOOLS: SPRING 1980

Planned Time of Entry	U.S. Total		Major Sectors						High-Performance Schools			
			Public		Catholic		Other Private		Public		Private	
	Grade		Grade						Grade			
	10	12	10	12	10	12	10	12	10	12	10	12
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
In the year after high school	48.5	59.3	41.8	57.4	71.2	77.0	64.9	73.2	74.8	84.6	94.7	95.1
Later	15.8	10.6	16.2	11.0	10.8	6.9	13.7	8.0	16.2	6.5	3.6	3.0
Don't know	21.2	10.5	22.1	10.8	13.0	7.1	14.1	8.4	5.2	2.7	1.5	0.6
No plans to enter	14.5	19.6	15.4	20.8	5.1	9.0	7.4	10.4	3.8	6.1	0.4	1.4

NOTE: Details may not add to totals because of rounding.

private schools have percentages in the 20-to-30 range. At the other extreme, only about 5 percent of the sophomores from high-performance private schools show this uncertainty.

In every sector, a higher percentage of seniors plan on going immediately to college, with the greatest gains over the sophomore students in the public schools. Yet, each sector also shows an increase among those who are definitely not going to college. The number who say they plan to defer college decreases in all sectors, and the number who say the don't know decreases even more sharply. Thus post-high-school plans, whether for college or for something else, have crystallized considerably by the senior year among students in all school sectors. The percentage of seniors who still don't know, or plan to defer college, remains greatest in the public schools, as it did among sophomores, but the crystallization appears to have been greatest in the public schools.

Plans for higher education constitute one type of post-high school-plan; plans for a job constitute another. Seniors planning to work in the year after high school were asked about the concreteness of their plans by the question: "Do you now have a job lined up for when you leave school?" Table 6.1.6 shows responses to this question (EB073).

Results indicate that public school seniors have the most fully implemented plans. Of those who plan to work full time after high school, a higher percentage in the public schools already have a job lined up. The sectors are ordered in approximately the reverse of their order with respect to concreteness of college plans. Just as college plans are less concrete and less fully implemented among public school seniors expecting to attend college than among their counterparts in private schools, job plans are less concrete and less fully implemented among those private school seniors planning to work after

TABLE 6.1.6

PERCENTAGE DISTRIBUTIONS OF JOB PLANS FOR THOSE SENIORS IN PUBLIC AND PRIVATE SCHOOLS WHO PLAN TO WORK FULL TIME NEXT YEAR: SPRING 1980

Definite Job Lined Up	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Other Private	Public	Private
Total:						
Number	1,776,998	1,648,034	84,193	44,580	13,164	191
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Yes	53.5	53.9	50.1	45.1	50.3	30.0
No, but looked	22.0	22.0	24.4	17.0	18.6	18.9
No	24.4	24.0	25.4	37.8	31.1	51.0

NOTE: Details may not add to totals because of rounding.

finishing high school. This suggests that the private schools--perhaps because most do not have vocational programs, perhaps because of less tangible factors--do less than public schools in aiding job placement among their graduates who are not going on to college.

6.2 Effects of Private Schools on Outcomes of Schooling

It is evident from the preceding section that students differ across sectors in their achievement on standardized tests and in their post-high-school plans. What is not clear is whether going to a public school, a Catholic school, or another type of private school makes a difference in either of these outcomes. The differences may well result from student selection factors associated with each of the sectors. In this section we will try to answer that fundamental question: Are the differences observed at grades 10 and 12 entirely due to selection, or do the average public school, the average Catholic school and the average other private school differ in their effects on basic cognitive skills and on plans for further education? That is, what would be the differences in outcome if the students coming into the different sectors were alike? This is a central question for many state and federal policies affecting public and private schools; and an answer to the question may also give some insight into school practices that affect achievement, practices which differ among sectors.

There are two classical methods of answering this question with data from schools in which there has not been a random assignment of students. Both have some defects. One method uses multivariate analysis to statistically control for background characteristics which effect achievement. By comparing students with the same parental education, the same income, the same parental interest in the child's education, and so on, the students in different schools will--it is assumed--be "equated" in terms of their backgrounds, thus making any outcome differences attributable to something about the school. The other method involves measuring the outcome variable early in the student's school career and again later. Differential change in the outcome variable can then be attributed to something about the school. This method, in effect, uses the students' own prior responses as a control for the later ones, using the prior responses to control for differential selection into different schools.

The principal defect of the first method is that it is seldom possible to control on _all_ relevant background characteristics. Thus the possibility remains that the differences attributed to differences in schools are instead due to some unmeasured aspect of the student's background. This defect is particularly important here, since one known difference between parents of children in public schools and parents of children in private schools is that the latter have chosen their child's school and are paying tuition to implement this choice. It seems probable that this behavior is an indicator of additional differences in the parents' behavior toward the child's education, differences that could well affect the very outcomes that are of interest. Yet this difference between parents, by its very nature, is not something on which students in public and private schools can be equated. Consequently, this approach is especially problematic in comparing public and private schools.

The second approach, use of the same student's earlier response on the same outcome variable, is free from some of the defects of the first approach, but it has some defects of its own. For example, it may be that the rate of change in an outcome variable, such as achievement, varies among students at different levels of performance, even if they are subject to the same school environment. If this is true, differential changes in schools where the students are initially different can be mistakenly attributed to effects of the school.

Essentially, any discussion on the virtues and defects of this second method is irrelevant to the present inquiry because the data do not include prior measures of these outcome variables on the same students. For the sophomores, such analysis will be possible two years hence, when they are seniors, but not at present.

However, having measures of the outcome variable available for both sophomores and seniors in the same schools does open other avenues for obtaining evidence about possible differential effects among the different school types. In the remaining parts of this chapter, several methods, including statistical techniques designed to control for selectivity biases, will be used to determine whether differential effects exist. The greatest attention is paid to cognitive achievement as an outcome of schooling. This is followed by a shorter examination of plans for higher education as a second type of outcome. Throughout this section we examine only the three major sectors, leaving aside the two high-performance sectors.[1]

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[1] The two high-performance sectors present several problems of different importance in different parts of this chapter. One is the small number of schools and students in these sectors: 12 schools, 311 seniors, and 370 sophomores in the high-performance public schools and 11 schools, 326 seniors, and 353 sophomores in the high-performance private schools. A second is the fact that, especially in the private schools, the average number of items correct among sophomores is close to the upper limit. A third is that the schools were selected on the basis of outcomes of scores in a similar standardized test (the National Merit Scholarship test), a fact which presents especially severe problems for the task of eliminating selectivity effects. Most important, for this section, is that they have been selected on the basis of achievement levels.

6.2.1 School sector effects on cognitive achievement

The three achievement subtests described in section 6.1 were regressed, by sector and grade, on seventeen background variables, measuring both objective and subjective characteristics of the family and home. We have included some characteristics which are not clearly prior to the achievement outcome to minimize the likelihood that selection effects would masquerade as effects of differences in the sectors themselves. To the degree that this strategy overcompensates for background, the resulting levels of background-controlled achievement in Catholic and other private schools may be artificially depressed.

The background characteristics, classified as either clearly prior to (that is, unaffected by) the student's achievement level, or not clearly prior to the student's achievement level, are the following:

Clearly prior
- Family income
- Mother's education
- Father's education
- Race
- Hispanic/non-Hispanic
- Number of siblings
- Number of rooms in the home
- Student lives with two parents
- Mother's working before child was in elementary school
- Mother's working when child was in elementary school

Not clearly prior (in rough order of likelihood of being prior)
- Encyclopedia or other reference books in home
- More than fifty books in home
- Typewriter in home
- Owns pocket calculator
- Frequency of talking with mother or father about personal experiences
- Mother thinks student should go to college after high school
- Father thinks student should go to college after high school

Table 6.2.1 shows, for students with the same measured background characteristics, the additional increments on the sophomore scores in the reading, vocabulary and mathematical subtests that may be attributable to being in the Catholic or other private sector.[1] The results suggest that sophomores in both private sectors achieve about the equivalent of one grade level above those with similar background characteristics in the public schools, a difference that is significant at the .01 level.

The increments in achievement were estimated for each grade, within the public and private sector by taking differences of standardized achievement estimates. The standardized estimates of achievement $(\hat{Y})$ were calculated as follows:[2]

$$\hat{Y}_{ij} = a_{ij} + \sum_{k=1}^{n} b_{ijk}\bar{X}_k$$

where $\hat{Y}_{ij}$ is the standardized score for the i^{th} grade in sector j, a_{ij} is the intercept and b_{ijk} are the coefficients for the background variables in that sector and grade. $\bar{X}_k$ is the mean for the public school sophomores on the k^{th} background characteristic. The increments shown on table 6.2.1 are the

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[1] The total variance explained by these background factors in each of these equations is listed in appendix A, tables A.4.1 and A.4.2. In the private school regressions, dummy variables were used for other private and high-performance private schools. The latter, however, are not included in the results discussed in this section.

[2] Separate regressions for public and private school sectors at each grade were done, rather than using a single regression equation with dummy variables for sectors, to allow for different effects of background characteristics in different sectors. The Catholic and other private sectors were combined for a single regression, because of the smaller numbers of cases in these sectors. A dummy variable for the other private sector was included in the equation. The estimated increment at the sophomore level due to the Catholic sector is obtained by first calculating the predicted test score for students with background characteristics standardized to that of the average public school sophomore, and then finding the difference between the Catholic sector and the public sector. The increment for the other private sector is found by adding to this the value of the other private dummy variable. Regression equations used in this table and in table 6.2.1 are given in appendix tables A.4.1 and A.4.2. Unless noted otherwise, all the regression analysis in this report has been done with pairwise deletion of cases.

TABLE 6.2.1

ESTIMATED INCREMENTS TO TEST SCORES IN PUBLIC AND PRIVATE SCHOOLS WITH FAMILY BACKGROUND CONTROLLED: SPRING, 1980[a]

(Standard error of difference in parenthesis)[b]

	Reading	Vocabulary	Mathematics
Public school sophomores	3.60	3.69	9.40
Standardized sophomore increments for:			
Catholic schools	0.32 (.048)	0.36 (.045)	0.58 (.091)
Other private schools	0.14 (.064)	0.33 (.060)	0.56 (.121)
Senior increment in public schools	0.73 (.018)	0.63 (.018)	0.88 (.037)
Raw increments (from Table 6.1.3)			
Sophomore increments for:			
Catholic schools	0.74	0.90	1.65
Other private schools	0.72	1.09	1.88
Senior increment in public schools	0.88	0.79	1.23

[a] Family background refers to seventeen subjective and objective background characteristics which are listed, along with the relevant regression coefficients and sector means, in appendix a, tables A.4.1, A.4.2 and A.4.3.

[b] Numbers in parentheses are standard errors of sector differences in predicted achievement. The standard error is calculated by taking the square root of the sum of variances of the predicted means (estimated by standardization of each of the sector-grade specific regression equations to the average background of public sophomores), $\sqrt{\text{var}(\hat{Y}\text{ public}) + \text{var}(\hat{Y}\text{ private})}$. The variances are estimated by pre-multiplying the variance-covariance matrix of the regression coefficients, V(b) by the transpose of the public sophomore background mean vector, $\bar{X}'$, and post-multiplying this product by the vector of public sophomore background means; that is, $\text{var}(\hat{Y}) = \bar{X}'V(b)\bar{X}$. See Draper and Smith (1966) for a discussion of estimating variances of point estimates such as these. Regression equations were estimated using frequency-weighted pairwise deletion. In the variances calculated here, estimates were readjusted to reflect the sample size, which in this case is taken to be the number of students in a given grade and sector who had completed the respective test. Empirical estimates of standard errors in the private sectors are given in Appendix A.1.2; the Catholic sector estimate is consistent with those reported here, the other private sector estimate is larger.

differences of each $\hat{Y}_{ij}$ from the public school sophomore mean achievement for each subtest. Estimates of $\hat{Y}_{ij}$ for the other private sector were obtained by adding the dummy coefficient for that sector on to the estimate for the Catholic sector, since a single equation was used for the private sector.

This standardization is designed to provide an answer to the question, "What would be the expected achievement of a student with background characteristics of the average public school sophomore who was subjected to school effects such as those found in the average Catholic or other private school?" Alternatively, a standardization to the "average U.S. sophomore" could have been done, by using as the values $\overline{X}_k$, the U.S. sophomore mean on the k^{th} background characteristic. This would give virtually the same results as shown here, because the U.S. sophomore background characteristics are very close to those of the public school sophomore. Still a third alternative would be to ask what would be the expected achievement of the average Catholic or other private school sophomore subjected to school effects such as those found in the average public school. This would involve use of the Catholic or other private school means as values of $\overline{X}_k$ in the equation. These results would differ somewhat from those shown in table 6.2.1, because the background chracteristics of private school sophomores, a small minority of the school population, differ somewhat from the national average, and because the estimated effects of background characteristics differ in the three sectors. These and other standardizations can be carried out by use of tables in appendix A.4.[1]

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[1] It was recommended by members of the NAS panel which reviewed the draft report that the report include not only standardization to the average public school sophomore, but also to the average Catholic and other private sophomores. We have done that in the next chapter, but not in this chapter, for here we wish to focus attention on the average U.S. sophomore which, as we have pointed out in the text, would show virtually identical results to those of the average public school sophomore.

The increments given in table 6.2.1 for each type of private school are positive, showing that students of the same background characteristics have generally higher achievement in both of these types of private schools than in the public shools. However, the differences are reduced compared to the raw differences from table 6.1.3 (shown in the lower half of table 6.2.1), because of the statistical control of family background. Moreover, the increments are slightly higher for Catholic schools than for other private schools.

Comparing the Catholic and other private background-controlled increments to the raw increments shows that for Catholic schools, between half and two thirds of the raw increments are eliminated by the statistically controlled background differences, and for other private schools, over two thirds of the raw increments are eliminated. The greater reduction for students in the other private schools is due to the fact that their backgrounds differ more from public school students than do the backgrounds of Catholic school students.

The background standardized senior public school increment, shown on the fourth row of table 6.2.1, provides us with two additional pieces of information regarding achievement in public and private schools. First, the fact that the estimates are all slightly lower than what would be estimated from the raw achievement scores (shown in the lower half of the table) indicates that the family backgrounds of seniors are slightly higher than those of sophomores, a difference that is attributable to greater dropout rates between grades 10 and 12 for students from lower socioeconomic backgrounds. Thus the estimated growth from sophomore to senior years, which appears low in table 6.1.3, is even less than what appears there.

Second, comparing the sophomore increments in Catholic and other private schools with senior increments in public schools indicates that the Catholic school increments are about half as large, that is, about one grade level, while the other private increments are about half as large in vocabulary and mathematics, but only about a fifth as large in reading. Thus, except for reading comprehension in the other private schools, in which the increment is almost negligible, the estimated increments due to attendance at Catholic or other private schools are about one grade level.

It is useful to ask about the robustness of these results. They appear rather robust under changes in background variables (though use of subsets of the background variables shows greater effects) and under changes from subtests to full tests. If we use the full tests in reading, vocabulary, and mathematics, we obtain the following estimated increments:

	Reading	Vocabulary	Mathematics
Public school sophomores	8.92	10.67	18.39
Catholic increment	.67 (.085)	.99 (.091)	1.17 (.159)
Other private increment	.37 (.030)	.73 (.185)	1.50 (.321)

The private school increments are larger for the full tests, but expressed as fractions of the total number of items in the test (19, 21, and 38 rather than 8, 8, and 18) they are very close to the same. (Standard errors of the increments, obtained by the method described in the footnote to table 6.2.1, are in parentheses.)

If a single regression equation with dummy coefficients for each of the private sectors is used, rather than separate private and public equations, we find that, except in vocabulary, the estimated increments are somewhat smaller than those found in table 6.2.1 for the subtests and in the listing above for the full tests:

	Subtests			Full tests		
	Reading	Vocabulary	Mathematics	Reading	Vocabulary	Mathematics
Coefficients:						
Catholic	.26 (.04)	.41 (.04)	.46 (.09)	.54 (.09)	.92 (.09)	.88 (.16)
Other private	.02 (.07)	.31 (.06)	.22 (.12)	.06 (.11)	.44 (.12)	.75 (.21)

However, most of the effects remain at a sizable level. In all cases, except three for other private schools (reading subtest and full test, and the mathemathics subtest), the sizes of the coefficients are considerably greater than twice their standard errors (shown in parenthesis).

Thus, using several different estimates, we find that after controlling for varying student background characteristics, Catholic school sophomores perform at the highest level, sophomores in other private schools next, and sophomores in the public schools lowest. And the differences between the public sophomore performance and each of the two private sectors is significant under each method.

Another way to examine differential effects of public and private schools is suggested in table 6.1.3, showing the raw scores of sophomores and seniors in each sector on identical subtests. We can make a sophomore to senior comparison similar to that in section 6.1, but controlling on family background differences. In effect, this is an extension of table 6.2.1 and can be estimated at the senior level for each of the private sectors, as follows:

$$I_j = \hat{Y}_j - \hat{B}_j - G$$

where I_j is the added senior increment in sector j, $\hat{Y}_j$ is the background standardized senior achievement estimate, $\hat{B}_j$ the sophomore background standardized achievement estimate, and G is the standardized growth rate (sophomore to senior increment) in public schools.

TABLE 6.2.2

ESTIMATED SOPHOMORE-TO-SENIOR ACHIEVEMENT GROWTH IN CATHOLIC AND OTHER PRIVATE SCHOOLS BEYOND THAT IN PUBLIC SCHOOLS FOR STUDENT WITH AVERAGE BACKGROUND[a]: SPRING 1980

(Standard error of difference in parenthesis)

	Reading	Vocabulary	Mathematics
Catholic	-0.07 (.072)	0.19 (.066)	0.01 (.136)
Other private	0.27 (.095)	0.17 (.087)	0.17 (.180)

[a] Estimates are obtained from separate regressions for sophomores and seniors in each sector, obtaining predicted achievement in each sector and grade standardized to mean public school sophomore background characteristics for seventeen objective and subjective characteristics. "Extra growth" is obtained by comparing these standardized achievements between grades and then across sectors. Standard errors for the differences between Catholic and other private sophomore-to-senior growth and public sophomore-to-senior growth are calculated by taking the square root of the sum of variances of the sophomore-to-senior differences for the sectors under comparison. The variances of the sophomore-to-senior differences are obtained by the method described in the footnote to table 6.2.1. Regression coefficients are given in tables A.5.1 and A.5.2 in Appendix A.

These added sophomore-to-senior increments in both private sectors are beyond the senior increment (shown in table 6.2.1) in the public sector as shown in table 6.2.2. The table shows, overall, little or no evidence of extra growth in the Catholic schools beyond that in the public schools, but consistent extra growth in the other private schools. The amount of extra growth in the other private schools averages about a quarter of the sophomore-senior growth in the public schools (0.27 + 0.17 + 0.17 from table 6.2.2 divided by 0.73 + 0.63 + 0.88 from table 6.2.1).

Again, it is useful to look at alternate methods of estimating these increments. If the full tests were used rather than the subtests, senior scores and increments comparable to those in table 6.2.1 would be as follows (standardized to public school sophomores):

	Reading	Vocabulary	Mathematics
Public school seniors	10.41	12.45	18.48
Catholic increment	0.54	1.29	0.90
	(.098)	(.132)	(.138)
Other private increment	1.18	1.32	1.34
	(.208)	(.280)	(.290)

Although comparison of these increments directly to the sophomore increments on the full tests is less meaningful because of the different items in the total tests for sophomores and seniors, a comparison may still be made. The comparison shows that inferences would not be changed if the full tests had been used.

A single regression equation for seniors in all sectors shows significant differences for both the subtests and full tests:

	Subtests			Full tests		
	Reading	Vocabulary	Mathematics	Reading	Vocabulary	Mathematics
Coefficients:						
Catholic	.13	.46	.46	.32	1.15	.64
	(.05)	(.04)	(.09)	(.09)	(.12)	(.14)
Other private	.23	.34	.51	.78	.99	.96
	(.06)	(.06)	(.13)	(.13)	(.16)	(.19)

The subtest coefficients may be compared to the sum of the relevant rows in table 6.2.1 and 6.2.2, and the full test coefficents may be compared to measures shown in the preceeding tabulation. These coefficients are all lower than the effects calculated by use of separate equations for the public and private sectors, but all are consistently greater than two standard errors (in parenthesis).

Thus the analysis suggests that for a student body standardized to the public school sophomore average background, the expected achievement of sophomores is highest in Catholic schools, next in other private schools. As for sophomore to senior growth, there is evidence of about 25 percent more growth in the other private schools than in either the Catholic or public schools.

However, these results concerning "growth" must be regarded with caution, for there are at least two potential sources of bias. First, if the background controls either overcompensate for or do not wholly eliminate the selectivity bias, this will lead to higher scores among private sector sophomores. Similarly, if the selectivity affects growth rates as well as levels, the background controls may either overcompensate or not wholly eliminate the selectivity bias in higher private school growth rates. Second, since the dropout rate is considerably greater in the public schools than in either of the private sectors, this may lead to a bias in the opposite direction. Some of the apparent growth in the public sector may be attributable to the loss of lower achieving students between the sophomore and senior years.

The existence of these potential sources of bias, possibly working in the opposite direction, suggests a more extended examination of growth rates under a variety of different assumptions. We turn now to that examination.

6.2.1.1 Estimates of Growth Rates

The estimates of growth are plagued both by initial selectivity into the different school sectors, and by a grade 10 to grade 12 selectivity due to dropouts between grade 10 and 12. These two types of selectivity very likely introduce opposite biases into the public-private achievement comparisons, biases which may be incompletely eliminated by the background variables we have introduced as controls. There is in addition another problem, that of the "ceiling effect." If the sophomores in one school know an average of six out of eight vocabulary items, while those in another school know only three out of eight, the sophomore-senior growth in the first school can be a maximum of two items, while the growth in the second school can be a maximum of five items. Yet we have compared "growth" in previous sections by examining only growth in number of items. This could be remedied by standardizing sophomore-senior differences, dividing the difference by the number of items not learned by the sophomore year.

An equivalent but somewhat more informative calculation is the calculation of an explicit learning rate, unaffected by the existence of a ceiling. The calculation is as follows. If q is a learning rate expressed as the probability per unit time of learning what remains to be learned, and p is the probability of knowing an item at a given time, then the equation for learning is $dp/dt = q(1-P)$. Solving for q, the learning rate, in terms of p_0 (the probability of knowing the item as a sophomore) and p_1 (the probability of knowing it as a senior), gives $q = -t^{-1} \log (1 - p_1)/(1 - p_0)$. Estimates of p_0 and p_1 are given as the proportion of items correct as sophomores and seniors respectively. The time difference is 2 years, $t = 2$. The learning rate calculated in this way will be an instantaneous rate expressed as items learned per year per item not already learned.[1]

The ceiling effect problem can be solved in this way. The dropout problem (or more generally the problem that the sophomores and seniors are samples from different populations) cannot be solved with present data, but some headway is possible. In particular, it is possible to calculate different learning rates in each type of school, using different assumptions. Some of these assumptions, such as those used in the preceding section, almost certainly overestimate learning rates by not taking dropouts into account; some very possibly underestimate learning rates by overcorrection for dropouts. Thus, rates calculated under some assumptions favor schools in which dropout is high, others favor schools in which dropout is low. These estimates of learning rates under different assumptions can give some bounds, not only to learning rates, but also to the public-private differences.

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[1] Some critics of the draft report have objected to the introduction of this learning "model" as introducing assumptions that have unknown effects. This objection fails to recognize that the learning rate as calculated is nothing more than a calculation of the gain per unit line divided by the possible gain at that time, taking into account that the possible gain will vary continuously over time.

The value of doing all of this, of course, is that estimates of growth provide a different and more effective way of correcting for bias due to selection into the private sector. In effect, they use the sophomore test score as a control for the senior test score, thus controlling for any selective factors which show up in high sophomore scores, and not only those which are related to measured background characteristics.

We will provide three estimates of growth rates in reading, vocabulary, and mathematics achievement, arrived at in different ways, as described below.

1. Raw Scores Table 6.1.3 gives the raw test scores for sophomores and seniors in the three subtests. These test scores are not corrected for dropout. Thus learning rates calculated from them will overestimate learning rates, and will overestimate most for the public schools, where the dropout rate is highest (as will be indicated below).

2. Background-adjusted scores Tables 6.2.1 and 6.2.2 provide the growth rates in each sector for students with the measured background characteristics of public school sophomores. In the public sector, as well as the private sector, this means there is a correction for dropouts through the background standardization which adjusts seniors' scores to those of the average public school sophomore. However, insofar as the lower scores of dropouts are not wholly

TABLE 6.2.3

TOTAL ROSTERS OF SOPHOMORES AND SENIORS IN SAMPLED SCHOOLS FOR ESTIMATING DROPOUTS BETWEEN SOPHOMORE AND SENIOR YEARS: SPRING 1980

Item	Public	Catholic	Other Private
Number of sophomores in sampled schools	369,942	16,030	2,009
Number of seniors in sampled schools	282,084	14,181	1,746
Difference	87,858	1,849	263
Proportion of sophomore class	.24	.12	.13
Proportion of senior class	.31	.13	.15

accounted for by these background factors, there remains an uncorrected overestimate of learning rates. This will again be greatest in the public schools, where the dropout rate is greatest. Here, then, any uncorrected selection bias operates against the private sectors.

3. Dropout-adjusted senior scores By first estimating the proportion of dropouts in each sector, and then by making assumptions of their place in the test score distribution, it is possible to recalculate senior scores in effect by adding back into the senior test score distribution the assumed scores of dropouts. Our estimate of dropouts is obtained as follows. In each school, we know the total size of the senior roster and the total size of the sophomore roster. The difference between them is due to several factors, including the sizes of the total cohort these two years, as well as the dropout rate between sophomore and senior years. Since factors except the last are relatively minor, we may regard this difference as an estimate of the number of dropouts who are no longer present in the senior class.

Table 6.2.3 shows the total number of sophomores and seniors in the sampled schools by sector, as well as the fraction this represents of the sophomore class and the fraction it represents of the senior class. The table shows that, according to this estimate, about 24 percent of the sophomore class in public schools is gone by the senior year, or a 24 percent dropout rate. The comparable rates in Catholic and other private schools are 12 and 13 percent, respectively.

The 24 percent dropout rate in public schools represents 31 percent of the senior class. This means that only about 76 percent of the students (100/131) who should be compared with sophomores to get a measure of achievement growth have been included in the public school data--and that the missing 31 percent of seniors came primarily from the lower part of the distribution. Similar statements, though for smaller fractions of the class (13 to 15 percent), can be made about Catholic and other private schools. To adjust the senior test score distribution in each sector, we have assumed that the dropouts came from the lower 50 percent of the test score distribution on each test and were distributed in that lower half in the same way that remaining seniors in the lower half of the distribution are distributed. In effect this means that within the lower half of the senior test score distribution, and within the upper half, the distributions do not change; but the lower half, augmented by the dropouts, becomes a larger share of the total.

This assumption leads to modified senior test scores, giving the senior scores and estimated senior-sophomore gains shown in table 6.2.4. The estimated gain is reduced most in the public schools, because the estimated dropout rate is over twice as high as in either private sector.

Since the estimated proportion of dropouts is somewhat higher than estimates from other sources (Grant and Eiden: 1980), they should be considered overestimates of the actual dropout rate. The assumption about where the dropouts came from in the test score distribution may be problematic. Dropouts may be less fully drawn from the lower part of the test score distribution than assumed. If there are errors in numbers of dropouts and

TABLE 6.2.4

ESTIMATED SOPHOMORE-SENIOR GAINS IN TEST SCORES WITH CORRECTIONS FOR DROPOUTS MISSING FROM SENIOR DISTRIBUTION: SPRING 1980

Item	Public			Catholic			Other Private		
	10	12	Est. Gain	10	12	Est. Gain	10	12	Est. Gain
Estimated gains[a]									
Reading	3.57	4.05	0.47	4.33	4.81	0.47	4.30	5.11	0.81
Vocabulary	3.68	4.09	0.41	4.58	5.19	0.61	4.73	5.35	0.62
Mathematics	9.39	9.77	0.38	11.04	11.73	0.68	11.28	12.26	0.98

[a] Numbers are rounded to two decimals independently so that some rounded "estimated gains" differ from the difference between rounded sophomore and senior scores.

their locations in the achievement distribution, they probably lead to underestimates of learning rates, and greatest underestimates where dropout is greatest, that is, the public schools.

Thus, if learning rates are calculated from each of these three sets of test scores--raw, background-corrected, and dropout-corrected--we have learning rates which we can be fairly certain are overestimates in the first two cases and underestimates in the third. The first two estimates favor public schools while the third favors the private schools.

Table 6.2.5 shows the estimated learning rates, calculated for (1) table 6.1.3 (2) tables 6.2.1 and 6.2.2; and (3) table 6.2.4. These rates provide a range for each test and each sector, within which the correct rate very likely falls. The rates are lowest for the mathematics items, and roughly comparable for the reading comprehension questions and the vocabulary words. For vocabulary and mathematics, there is no ambiguity: both rows (1) and (2), which are probably favorable for public schools, and row (3), which is probably favorable for private sector schools, show higher learning

TABLE 6.2.5

ESTIMATED LEARNING RATES: USING RAW SCORES, BACKGROUND-ADJUSTED AND DROPOUT-ADJUSTED ESTIMATES[a]: SPRING 1980

	Public	Catholic	Other Private
Reading			
1. Raw Scores	.11	.10	.16
2. Background-adjusted	.09	.09	.13
3. Dropout adjusted	.06	.07	.12
Vocabulary			
1. Raw Scores	.10	.13	.14
2. Background-adjusted	.08	.12	.11
3. Dropout-adjusted	.05	.10	.10
Mathematics			
1. Raw Scores	.08	.08	.12
2. Background-adjusted	.05	.06	.07
3. Dropout-adjusted	.02	.05	.08

[a] Background standardized to average public school sophomore.

rates in both Catholic and other private sectors. In reading, however, there are inconsistencies: rows (1) and (2) show a lower rate in the Catholic sector than the public sector, while row (3) shows a higher rate in the Catholic sector.[1]

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[1] It should be pointed out that the apparent low sophomore-senior learning rate for reading in the Catholic schools is inconsistent with the raw and background-standardized sophomore rates, which are higher than in either of the other sectors. If a constant learning rate is assumed, and the public school learning rate from row 2 is used to calculate the time when reading comprehension was zero, the time would be 6.6 years before the grade 10 test. If the same 6.6 years is used in conjunction with the background-standardized sophomore score of 3.92 in Catholic schools (from table 6.2.1), this gives a learning rate of .10 during that period, greater than the .09 rate in the public sector.

Thus the overall evidence from calculation of ranges of learning rates confirms the inference of somewhat greater achievement in the private sector for vocabulary and mathematics; the evidence is divided concerning the public-Catholic comparison in reading.[1]

6.2.1.2 Different effects for students from different backgrounds

In addition to the level of achievement students obtain in the various sectors, it is important to know something about the equality of outcomes for students from different backgrounds. We may ask, then, just how similar the sectors are in the differences in achievement that exist between students with varying family backgrounds.

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[1] A problem not discussed in the text is the fact that some students in all sectors did not take the tests, and the proportion differs from sector to sector though it is similar from test to test within sectors. For the mathematics tests, it is 9.2 percent for sophomores and 13.0 percent for seniors in the public sector, 4.2 percent for sophomores and 8.8 percent for seniors in the Catholic sector, and 18.2 percent for sophomores and 19.0 percent for seniors in the other private sector. To take into account these differences, tests scores were imputed for those with missing test scores, using a variety of predictor variables. For example, for the mathematics test for seniors, the following variables were included: grades in school; number of semesters of mathematics courses in grades 10 to 12; having taken algebra 2, calculus, remedial mathematics, advanced mathematics; reading the front page of the newspaper; interest in school; satisfaction with self; absences; tardiness; sex; father's education; mother's education; family income; race; and ethnicity. Separate regression equations were estimated for seniors and sophomores, and for public and private (the two private sectors together). R^2 were .37 and .50 for sophomores and seniors in public schools and .39 and .47 for sophomores and seniors in private schools. Recalculating the mean achievement in mathematics after values were imputed changes the means very little (sophomores: 9.2, 11.1, 11.2 in public, Catholic, and other private, and seniors; 10.4, 12.2, 12.7 in public, Catholic, and other private). Comparing these scores with those in table 6.1.3 shows little difference, with a 0.2 decrease in both sophomores and seniors in public schools, 0.1 increase in both sophomores and seniors in Catholic schools, and 0.1 decrease in sophomores in other private schools, and no change in seniors. Consequently, imputed values were not included in making the calculations in the test. However, to fully test any effect of the missing values, learning-rate calculations were made for mathematics with imputed scores included. These were .02, .07, and .09 for public, Catholic, and other private schools respectively. These show slightly higher values for Catholic and other private schools, but do not change the qualitative inferences made in the text.

For instance, what is the expected achievement for students whose parents' education is considerably above the national average as compared with those whose parents are considerably below the national average? Such a comparison will show how well each of these school sectors functions for students from different family backgrounds.

For this analysis, Catholic and other private schools were examined separately, because of evidence that students from differing family backgrounds fare differently in these two sectors. Consequently, to obtain stable estimates the number of controlled background characteristics were reduced. We believe that this does not affect the inferences drawn in this section.

Three background characteristics are chosen for the comparisons: parental education, race, and ethnicity. To compare the expected achievement by parental education, we estimate first the case where both parents are high school graduates, and, second, the case where both parents are college graduates--keeping the other background characteristics (income, race and ethnicity) at the average for public school sophomores. Similarly, the expected achievement by race and ethnicity is estimated, keeping the other background variables at the national average.[1]

Table 6.2.6 shows the results of calculating these expected achievement differences by grade and section. The most striking finding is

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[1] These comparisons are carried out using the same type of analysis as in tables 6.2.1 and 6.2.2 , but with fewer background variables, as described in the text. Regression coefficients are given in appendix A.4. For the black-white and Hispanic/non-Hispanic comparisons, the regression coefficients themselves are used, since black and Hispanic were dummy variables in the equation. For parental education, the difference is calculated as the sum of regression coefficients for parental education, multiplied by 5 (=7-2). The black-white and Hispanic/non-Hispanic differences are not shown for other private schools because the numbers of blacks and Hispanics in the sample of these schools is small enough to make estimates unstable.

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TABLE 6.2.6

ESTIMATED ACHIEVEMENT AT GRADES 10 AND 12 FOR STUDENTS WITH PARENTS OF DIFFERENT EDUCATIONAL LEVELS, DIFFERENT RACE, AND DIFFERENT ETHNICITY, OTHERWISE STANDARDIZED TO PUBLIC SOPHOMORE BACKGROUND: SPRING 1980

(Standard error in parenthesis [a])

Comparison Category	Public Sector						Catholic Sector						Other Private Sector					
	Reading		Vocabulary		Mathematics		Reading		Vocabulary		Mathematics		Reading		Vocabulary		Mathematics	
	10	12	10	12	10	12	10	12	10	12	10	12	10	12	10	12	10	12
1. Parental education																		
a. High school graduation	3.1	3.9	3.1	3.8	8.3	9.3	3.8	4.7	4.0	4.9	10.1	10.9	3.3	4.0	3.4	4.2	8.6	9.4
b. College graduation	4.2	4.9	4.3	5.0	10.6	11.7	4.6	5.1	4.8	5.6	11.2	12.4	4.6	5.4	4.8	5.6	11.3	12.7
2. Race and ethnicity																		
a. White/Anglo	3.8	4.7	3.9	4.6	9.9	11.0	4.3	5.0	4.5	4.8	11.0	12.0	*	*	*	*	*	*
b. Hispanic	3.0	3.5	3.2	3.7	8.1	8.8	3.8	4.6	4.0	4.8	9.5	10.7	*	*	*	*	*	*
c. Black	2.7	3.3	2.8	3.4	7.2	8.1	3.7	4.4	3.5	4.5	9.1	10.3	*	*	*	*	*	*
3. Differences:																		
a. College vs High school parental education	1.1 (.03)	1.0 (.03)	1.2 (.03)	1.2 (.06)	2.3 (.06)	2.4 (.06)	0.7 (.09)	0.5 (.10)	0.8 (.08)	0.7 (.08)	1.0 (.16)	1.4 (.19)	1.4 (.22)	1.4 (.23)	1.5 (.20)	1.5 (.21)	2.7 (.44)	3.3 (.43)
b. Anglo vs. Hispanic	0.8 (.05)	1.2 (.06)	0.7 (.06)	0.9 (.05)	1.8 (.07)	2.2 (.11)	0.5 (.14)	0.4 (.16)	0.5 (.14)	0.5 (.13)	1.6 (.26)	1.2 (.30)	*	*	*	*	*	*
c. White vs Black	1.2 (.04)	1.3 (.04)	1.1 (0.5)	1.3 (.04)	2.7 (.09)	2.9 (.08)	0.6 (.16)	0.6 (.17)	1.0 (.15)	0.8 (.15)	2.0 (.29)	1.7 (.33)	*	*	*	*	*	*

*Sample size too small to estimate reliability.

[a] Standard errors of the differences are computed by the method described in the footnote to table 6.2.1, with the following modifications: The vector of means, X, now has the determined values for parental education, race or ethnicity, as the case may be, in place of the public sophomore means on those variables. Since, for each sector-grade level, only one equation is estimated per test, the covariance of slopes matrix is identical for both of the X vectors that enter a given comparison.

the greater homogeneity of achievement of students with different parental education levels in Catholic schools than in public schools. Also, there is a greater difference in achievement among students with different parental education levels in the other private schools than in the public schools. That is, the performance of children from parents with differing educational levels is more similar in Catholic schools than in public schools (as well as being, in general, higher), while the performance of children of parents with differing educational backgrounds is less similar in other private schools than in public schools (as well as being, in general, higher).[1]

Thus we have the paradoxical result that the Catholic schools come closer to the American ideal of the "common school," educating all alike, than do the public schools. Furthermore, as the lower panels of table 6.2.6 show, a similar result holds for race and ethnicity. The achievement of blacks is closer to that of whites, and the achievement of Hispanics is closer to that of non-Hispanics in Catholic schools than in public schools.

There remain two possible interpretations for this result, which will not be pursued here, but which warrant analysis. One is that within the same school there is greater diversity in performance between children of different family backgrounds in public and other private schools than in Catholic schools. The other is that the greater diversity of performance in public and other private schools arises from a greater diversity of schools. More specifically, in some schools, composed primarily of students from higher socioeconomic backgrounds, performance is high, higher than would be predicted on the basis of comparable students' performance in more heterogeneous schools. On the other hand, in schools composed primarily of students from lower socioeconomic backgrounds, performance is lower than would be predicted on the basis of comparable students' performance in heterogeneous schools. Data presented earlier in section 6.1 on the fraction of achievement variable lying between schools shows that the Catholic schools have the lowest variance, and the other private schools the highest.

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[1] This same pattern of results is found within academic and general programs in the public and Catholic sector. (See Coleman, Hoffer, Kilgore, 1981)

There is another important aspect of table 6.2.6. This is the comparison of achievement differences among students from different backgrounds at the sophomore and senior levels in different sectors. In general, these differences are smaller at the senior level than at the sophomore level in the Catholic schools, while they are greater at the senior level in the public and other private schools. Among nine sophomore-senior comparisons, six senior differences are smaller, two are equal, and one is greater in the Catholic schools; one is smaller, one is equal, and seven are greater in the public schools; and one is equal and two are greater in the other private schools.[1]

Thus, not only is the achievement more alike among students from different backgrounds in the Catholic schools than in the other sectors, it seems to become increasingly alike from the sophomore to the senior year. In the public and other private schools, the achievement of students from different backgrounds seems, in contrast, to diverge.

6.2.1.3 Alternative strategies for distinguishing between selection and effect

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[1] The qualitative inferences made in this section in comparing Catholic and public schools would be unchanged if all 17 background characteristics were controlled (analysis not reported here). It is because of the small sample size in the other private sector that the characteristics used here are reduced in number.

Because there is clearly self-selection into the private sector, the task of distinguishing between achievement differences due to selection and achievement differences due to different effects of schools in the three sectors is particularly important.

There is no wholly satisfactory way of distinguishing selection from effect in the absence of randomized assignment. For that reason, we have chosen to address the question of effect by several strategies. In section 6.2.1, we estimated achievement in public and private schools with statistical controls for all measured background factors which might also affect achievement and be related to the student's educational sector. The method, however, is subject to at least three kinds of difficulties. Two of these would ordinarily lead to attributing to effect of the sector some achievement differences actually due to selection. The other kind of difficulty would ordinarily lead to attributing to selection some achievement differences actually due to to differential sector effects. Two of the three may be illustrated by the path diagram in figure 6.2.1(a), and the third, by the path diagram in figure 6.2.1(b).

In figure 6.2.1(a) if there are effects as shown by lines 1, 2, and 3, then the method properly estimates the sector effects. If, however, there are other background factors, not included in the equation, labelled (A) in the diagram, and if there are non-zero effects represented by broken lines 4 and 5, then some achievement differences due to selection into the private sector are mistaken for sector effects. However, the closer to 1.0 the correlation (represented by line 6) between measured and unmeasured background factors, the smaller the error, reducing to zero if the correlation is 1.0.

Still in figure 6.2.1(a), there may be intermediate factors represented by (B), that are affected by school sector, and in turn affect

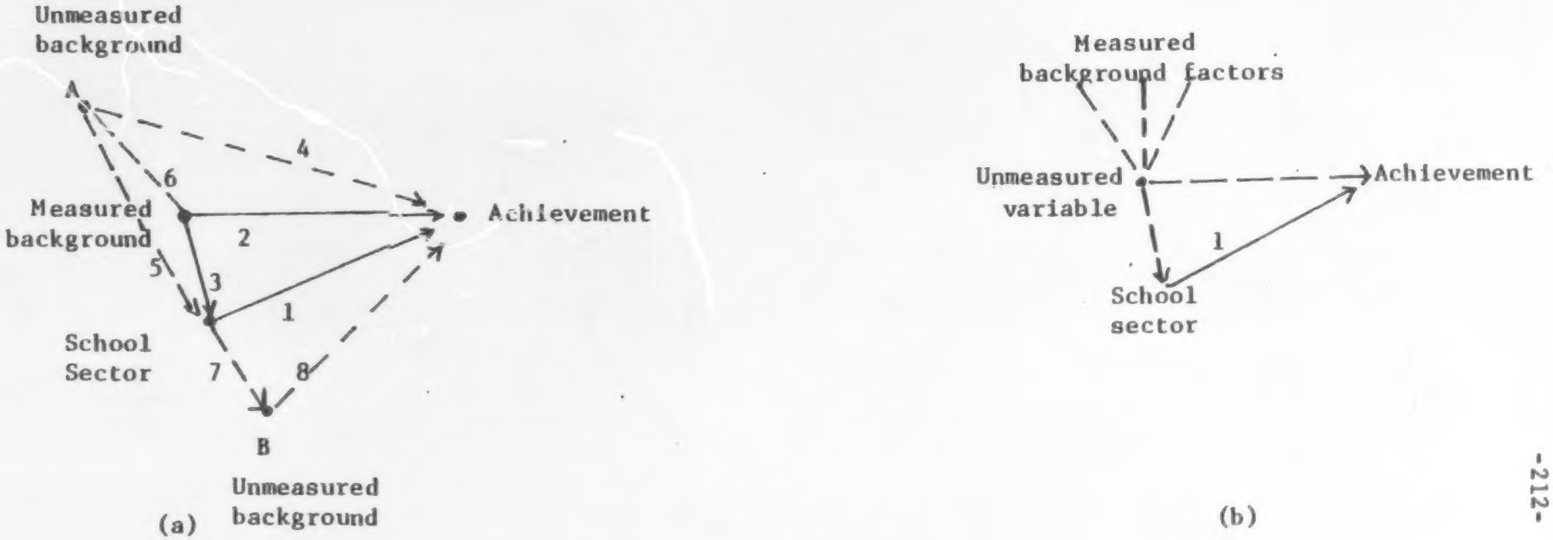
Unmeasured background
A
4
6
Measured background
2
Achievement
5
3
1
School Sector
7
8
B
Unmeasured background
(a)
Measured background factors
Unmeasured variable
Achievement
1
School sector
(b)

Figure 6.2.1

Unmeasured background and achievement models achievement. These intermediate factors include such things as parental interactions and expectations which are responsive to school performance and school demands. If these intermediate factors are included in the equation, then some achievement differences due to sector effect--and operating through these factors (B)--are mistakenly attributed to selection.

The third kind of difficulty is shown by figure 6.2.1(b). If the same equation is used as in figure (a), but instead of lines 1, 2, and 3 being true effects, there are unmeasured variables of which the measured background factors are only imperfect indicators, then some differences due to selection will be mistakenly attributed to sector effect.

In the presence of these problems, our strategy has consisted of the following:

1) Including as many background factors as possible, so that in figure (a), the possibility of variables like those labelled (A)--that is, with effects 4 and 5 but with a small relation to measured background-- is reduced. Also, if figure (b) is the correct specification, the inclusion of many factors, if they are together perfect indicators of the unmeasured variable, will eliminate any difference between the true sector effect and the measured sector effect.

2) Including in the equation some intermediate factors (represented by (B) in figure 6.2.1(a)), so that any tendency toward overestimates of sector effects due to unmeasured factors (A), or toward the paths shown in figure 6.2.1(b), is counterbalanced by a tendency toward underestimates due to inclusion of factors (B).

3) Measuring an additional consequence of the sector effect, in particular, the effect on sophomore to senior achievement growth. The general argument is that if a sector effect exists, it should be manifested not only through higher achievement at sophomore and senior levels, but through greater sophomore-to-senior growth. This was tested under three different sets of assumptions to provide a range of estimates of growth expected to bracket the true effect. This was done in section 6.2.1.1.

4) Measuring still another consequence of sector effect, if a sector effect exists, and if it operates through certain school practices and policies, then one should find that same effect within the public sector itself, by examining schools that differ in the practices. This is carried out in the next chapters.

There are, however, other alternative strategies. One, which has come into use by some social scientists, is explicit modelling of the structure shown in figure (b). Some (see Campbell, 1981) have argued that such an approach, using for example the LISREL program, should be used. We have not done so; our experience with LISREL is that its estimates are greatly dependent on model specification.

Another strategy which has been advocated is the use of econometric models designed to eliminate selection bias (Goldberger, 1981). These models have been designed for use in estimating - for example - the effect of a manpower training program on subsequent wages when there is self-selection into the manpower training program. Ordinarily, the necessity for such modelling arises because the dependent variable (e.g., wages) is observed only for the "selected" portion of the population (see Heckman, 1979), thus making estimates of sector effect not robust to differences in models.

The problem this approach addresses is this: Suppose the correct structure of effects is that shown by paths 1, 2, and 3 in figure (a). However, if one carries out a regression analysis involving only those students selected into a given sector, there is a potential bias in estimates of the effects of background variables on achievement, due to the self-selection into that sector. Since we used, in most of our analysis, separate equations for public and private sectors, and used estimates of the effects of background characteristics in arriving at sector effects, this sample specification bias could influence the estimates of sector effects. This seems unlikely, because, unlike the situation for which this approach was designed, here the dependent variable, achievement, is observed for the total population of 10th and 12th grade students, and our analysis involved use of data on the full sample--albeit in two equations.[1]

In addition, supplementary analysis (see pp. 20 and 22) was done using all sectors in a single equation, thus involving no selection in the sample on which the regression analysis was done.

Nevertheless, it is possible to take selection into account in our equations for the separate sectors.[2] Two equations must be identified for such an analysis: one, a probit equation, which predicts entry into the private (or public) sector; the other, a regression equation which predicts the achievement outcome, controlling on the probability of having the observed background characteristic governing selection, given that one was in the private (or public) sector.

We used this technique in order to have still another approach to distinguishing differences in achievement due to selection into a sector from those due to sector effects. Two model specifications were used. In both, the (full) sophomore mathematics test was used as the outcome variable. The first model assumes that all the variables which affect achievement directly also affect entry into the private or public sector. Thus, the selectivity bias control in the achievement regression equation captures the nonlinear effects of the set of variables in question on the achievement outcome. For both the probit equation predicting sector entry and regression equation predicting mathematics achievement, all but two of the seventeen variables used earlier were entered into the equation: father's education and father's expectations for college were deleted.[1] Two variables were added to the analysis because of their relationship to entry into the private sector: religious background (Catholic versus non-Catholic) and region (Northeast versus other). The results for this model were not reasonable.[2]

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[1] A more appropriate use of the model would be to estimate the effects of various factors on achievement among seniors in 1982 or when observations as sophomores were made in 1980, but who are not all present in 1982. If no testing of dropouts were to be done in 1982, the method could be used to correct for dropouts when estimating effects of background and school factors on achievement.

[2] This is done by including, in an ordinary least squares regression, or a generalized least squares regression, a term representing the probability of the private sector. (The inverse of this quantity is technically known as Mill's ratio.) See Heckman (1979), who has developed this technique, for an extended discussion.

For the second model specification we identified three variables as instrumental—that is, they affect entry into the private or public sector, but do not have a direct effect on achievement: income, religion, and educational expectations in the eighth grade. Each variable captures some major factor thought to contribute to private school entry: parents' financial assets, religious value preferences, and educational ambitions. The estimates for increments to achievement due to being in a private sector school using this second model of selecting and achievement again were greater than the raw increments, a result at odds with our other analyses, which showed that controlling on background factors reduces the raw increments by a half to two thirds or more. The dependence of these results on model specifications and their instability with these data suggest that this potential avenue toward separating selection from effect is not helpful in this particular case.

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[1] The program available for this analysis required a listwise deletion of cases and only 70% of the respondents had usable data on father's education. Sophomore response to item BB039 (father's education) included 8 percent who said they did not live with father, 17 percent who said they did not know, 4 percent multiple punch, and 2 percent who either refused to answer or had missing data.

[2] The results of the first stage, the probit analysis, are shown in Appendix table A.7 for both models. The probit analysis showed quite reasonable coefficients; the second stage analysis is where the problems arose.

The estimated increments due to being in a Catholic or other private school were not only positive, they were greater than the raw increments shown in Table 6.2.1, and in fact, put scores for private sectors beyond the test limits. The result probably expresses the instability of the model with the particular data set used here.

Finally, we used one more approach to provide further evidence, following an approach once suggested by Donald Campbell. This is based on the following. If a private school's apparent effect is due only to selection, then the greater achievement found there will be complemented by achievement in the remaining group, say in the public school, that is lower than would be found if there were no private school. That is, any increased achievement in one comes about through lower achievement in the other.

However, if the apparent effect is a true one, there will be some additional achievement in the system, due to the presence of the private school. Achievement will not be lower in the public school.

This general idea may be tested as follows: Consider two groups with achievement anticipated as equal, says, in the absence of a differential school effect. Then if private schools are available to the first group, with p_1 choosing a private school, and not to the second, and there is a school effect of size c then the achievement in the first group, averaged over both public schools and private schools, should be $s + p_1c$, while it is only s in the second group. Or more generally, if it is less available to the second group, with only p_2 in the private school, the achievement should be $s + p_2c$ in the second group. The observed difference, d, between achievement in the two groups is $(p_1 - p_2)c$, and since p_2 and p_1 are known, c may be estimated as $c = d/(p_1 - p_2)$.

Two groups which can be assumed to have equal achievement, other things constant, are Catholics and non-Catholics. Catholics, however, have much greater access to private schools. For Catholics, $P_1 = .195$, and for non-Catholics, $P_2 = .051$, giving a difference of .144. Thus, a bias-free estimation of the private (mostly Catholic) school effect is given as d/.144.

This approach is problematic because the method requires that one be fairly certain that the achievement in the two groups is equal, in the absence of private school attendance. More generally, the method is highly sensitive to small differences in S for group 1 and group 2, so long as the denominator, $p_1 - p_2$, is small.

The difference, d, can be calculated in two different ways: first, simply by the raw difference between Catholics and non-Catholics, and second, by the difference which remains after statistically controlling on variables related to achievement on which Catholics and non-Catholics might differ. The latter is done by a regression analysis on the total sample, using the previously specified seventeen background factors, region (Northeast versus other), and an additional dummy variable for Catholic religious background. The value of this dummy variable is then the estimate of d.

The six regression analyses (three tests in each of two grades) result in regression coefficients, which when divided by .144 give estimates for c, the increment in achievement due to attending a Catholic school. (The numbers in the first row should be comparable to row 2 of table 6.2.1). (Standard errors are in parentheses.) These estimates are:

	Reading	Vocabulary	Mathematics
Sophomores	.535 (.18)	.729 (.16)	1.59 (.34)
Seniors	-.430 (.20)	.375 (.17)	.424 (.37)

These comparable raw differences when divided by .144 are:

Sophomores	1.53	1.96	4.94
Seniors	.63	1.53	3.69

The results in the first two rows indicate much larger effects of Catholic school attendance for sophomores than the analyses shown in table 6.2.1, and smaller effects than calculations from table 6.2.2 would show. Therefore, the results appear to indicate that the assumption that s (public school achievement) is comparable for Catholics and non-Catholics is not valid, even after controlling for possible background differences, or that the divisor, .144, is sufficiently small as to make the results unstable. However, the evidence it does provide is in the direction of a positive effect of Catholic schools on achievement (except for reading, at the senior level).

Another possible comparison, based on the same general idea, is one among Catholics themselves. Some Catholic students have a Catholic school nearby, making attendance at Catholic school easy; others do not. Our sample design does not permit distinguishing these two sets of Catholic students, but it does allow distinguishing a subset of the former. Each Catholic school in the sample is in a particular (five-digit) zip code area. In many of these areas, public schools were also included in the sample. Thus, these areas have Catholics in public schools who had the opportunity to attend Catholic schools, but did not. They constitute the "nonselected" Catholic students. In the other public schools, some of the Catholic students had access to a Catholic school (that is, a school not in our sample), but some did not. The Catholic students in public schools without a Catholic school nearby should be higher-achieving than Catholic students in public schools near a Catholic school, by the amount of the selection bias. Adjusting the average achievement by use of the statistical controls will give a difference representing the unremoved selection bias. The amount of selection bias is the achievement in public schools in those areas without a nearby Catholic school, minus achievement in public school in those areas near a Catholic school. If this

TABLE 6.2.7

DIFFERENCES IN AVERAGE ACHIEVEMENT SCORES FOR PUBLIC SCHOOL STUDENTS IN AREAS WITHOUT A SAMPLED CATHOLIC SCHOOL AND PUBLIC SCHOOL STUDENTS IN AREAS WITH A SAMPLED CATHOLIC SCHOOL:[a] SPRING 1980

	Catholic Students	Non-Catholic Students
Adjusted with Five-Variable Background Regression		
Sophomores	-.200	.155
Seniors	.015	.103
Raw Differences		
Sophomores	.211	.255
Seniors	.194	.202

[a] Areas were identified by five-digit zipcode numbers.

difference is zero, it is evidence that all the selection bias has been removed; if it is positive, it is evidence that not all the selection bias has been removed.

Both the adjusted (using a five-variable background statistical control used in table 6.2.6) and unadjusted differences are shown in table 6.2.7. They are averaged over the three tests to give a single number at each grade level as a further control. The same comparison for non-Catholics (that is, those who are in public schools in the same five-digit zip code area as a sampled Catholic school, and those in public schools outside those areas) is made.

If there is an unremoved selection effect, then the Catholic column should be positive, as it is in three of four cases. It should also be greater than the non-Catholic column, but it is not. The non-Catholic column shows in all cases a positive value that is slightly larger. Thus, non-Catholics are used as a comparison to control for unmeasured characteristics associated in those zipcode areas where Catholic schools in the sample are located. The positive values shown for non-Catholics indicate a general lower achievement among non-Catholics in those areas (even after controlling in the regression on family income, mother's and father's education, race, and Hispanic ethnicity). This means that the positive values for three of the four Catholic numbers using both raw and adjusted values do not indicate a selection bias favoring Catholic schools. If anything it appears that any bias in the main analysis is in the other direction. Therefore, the test using the zipcode areas provides no evidence that there is an unremoved selection bias favoring Catholic school achievement in this analysis.

6.3 School sector effects on educational plans

In section 6.1, it was evident that plans for further education vary across sectors. What is not clear is just how much of this difference is a matter of selection and how much is actually brought about by the type of high school attended. While that question cannot be answered conclusively here, it is possible to understand more about the development of educational plans in each of the sectors.

First, controlling on the same seventeen family background characteristics used in table 6.2.1, it is possible to see the differences among the educational plans for students with similar family background characteristics. Table 6.3.1, comparable to the combined tables 6.2.1 and 6.2.2 for

TABLE 6.3.1

ESTIMATED INCREMENTS IN EDUCATIONAL EXPECTATIONS FOR STUDENTS IN PUBLIC AND PRIVATE SCHOOLS WITH FAMILY BACKGROUND CONTROLLED: SPRING 1980
(Standard errors of differences in parentheses)[a]

Expected level for public school sophomores	2.27
Sophomore increment in:	
Catholic schools	.25 (.020)
Other private schools	.11 (.041)
Senior increment in public schools	.08 (.008)
Additional increment for seniors in:	
Catholic schools	-.11 (.029)
Other private schools	.03 (.060)

[a] Standard errors for the increments are calculated by the method described in the footnotes to tables 6.2.1 and 6.2.2.

cognitive achievement, shows these differences. The table is based, as in the case of cognitive achievement, on regressions of expected level of schooling by grade and sector.

The categories used for this analysis, and their associated values, are given below. Thus, in examining table 6.3.1, the numbers should be interpreted in terms of these categories:

High school graduation or less	1
Some post-secondary education	2
Complete 4 years of college	3
M.A., Ph.D or other professional degree	4

The table shows that, for sophomores in public schools, the average level of education expected is 2.27, that is, slightly above "some post-secondary" education. Sophomores with comparable backgrounds in Catholic schools are almost one quarter level (.25) higher, while those in other private schools are about one-tenth of a level (.11) higher. Public school seniors with backgrounds similar to public school sophomores are only .08 higher in expectations. The seniors in Catholic schools show .11 less gain than the seniors in public schools, or almost no gain relative to sophomores, while the seniors in other private schools show almost the same gain as the seniors in public schools. The lesser sophomore-senior gain in Catholic schools may, of course, be due to the higher levels for Catholic sophomores, which can produce a ceiling effect.

It is also difficult to estimate the differential sophomore-senior change in educational expectations by sector, because of the differential dropout rate by school type (as shown in table 6.2.3), although controlling on family background characteristics partially corrects for this. Thus, for example, the estimated gain of .08 of an educational level in public schools may be solely due to the fact that those with the lowest educational expectations in the sophomore class are no longer present in the senior class.

There is, however, a way of estimating the change in educational expectations over time and across sectors which is based on the same person changing over time, and thus is not affected by dropouts. The seniors were asked whether they expected to attend college when they were in grades 8, 9, 10, and 11. The sophomores were asked the same question about their college expectations in grades 6, 7, 8, and 9. (Items BB068, EB068, YB072). Although such retrospective accounts cannot be wholly reliable, they are the only source of such information for these students. And they do show changes over time, indicating that students did discriminate between years, and did not simply respond alike for all years.

Panel (a) in table 6.3.2 shows the actual percent of seniors who reported expecting to go to college at each grade level in each sector, and panel (b) shows the expected percent for students with family background standardized to the public school sophomore.[1] Panels (c) and (d) show comparable information for sophomores.

Looking at panels (a) and (c), the actual responses, the data show that college expectations are higher in the private school sectors than in the public sectors. Between sector differences in educational plans appear to correspond to between sector differences in family background, with the exception that parental income and education are lower in Catholic schools than in other private schools, while college expectations in Catholic schools are just as high as those in other private schools.

When backgrounds are standardized to public school sophomores in panels (b) and (d) of the table, the differences are in the same direction. The differences between public and private are reduced, though all private schools remain above the public schools. The Catholic schools become almost uniformly higher than the other private schools.[2]

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[1] Again, family background variables are those used in table 6.2.1 and listed in section 6.2.1.

[2] The regression analysis was carried out with a 0-1 dependent variable, a procedure not usually wise to follow because of heteroscedasticity. A logit analysis eliminates this problem. However, available logit programs required listwise deletion of missing cases (which is undesirable with seventeen independent variables) and did not allow weighting. This resulted in baseline percentages that were too high.

When percentages for subgroups are in the ranges found here, that is, not a great distance from 50 percent, the use of a 0-1 dependent variable in an ordinary least squares (OLS) regression will usually give results very close to those of logit analysis. We report OLS results here, because the use of weighting allowed appropriate population estimates. The logit analysis, which except for the overall level of percentages, gives results similar to those reported here, is presented in the appendix table A.4.9.

TABLE 6.3.2

PERCENT OF SENIORS AND SOPHOMORES IN PUBLIC AND PRIVATE SCHOOLS INDICATING EXPECTATIONS TO ATTEND COLLEGE AT EARLIER GRADES: ACTUAL PERCENT AND PERCENT STANDARDIZED FOR STUDENTS WITH AVERAGE PUBLIC SOPHOMORE FAMILY BACKGROUND[a]

SPRING 1980

At Earlier Grade	Public	Catholic	Other Private
Seniors			
a) Actual percent			
At 8th grade	47	67	67
At 9th grade	51	71	69
At 10th grade	56	74	75
At 11th grade	62	79	78
b) Standardized percent			
At 8th grade	44	55	48
At 9th grade	48	59	51
At 10th grade	54	62	57
At 11th grade	60	68	63
Sophomores			
c) Actual percent			
At 6th grade	40	54	59
At 7th grade	43	60	61
At 8th grade	51	72	69
At 9th grade	58	78	73
d) Standardized percent			
At 6th grade	40	42	43
At 7th grade	43	48	44
At 8th grade	51	59	54
At 9th grade	58	66	60

[a] Standardization procedure follows general form outlined in section 6.2 and includes the seventeen family background variables identified in that section.

Apart from changes over the years, the differing levels of educational aspirations, when family background is controlled, show results similar to those in table 6.3.1. In both cases, when family background is controlled, students in Catholic schools show the highest educational aspirations, students in other private schools the next highest, and public school students the lowest. However, expectations are quite high in all sectors and differences between sectors is not great.

However, the principal question at hand concerns the development or changes in expectations over years of school. What do these retrospective accounts show about such changes in different types of school? As shown in table 6.3.2, the expectations grow, and grow substantially. The difference in the sample as a whole is 14 percentage points between grades 8 and 11 for the seniors, and 19 points between grades 6 and 9 for the sophomores. But that growth differs in the various types of school, making comparisons difficult since differing amounts of growth are possible at each level.

The most commonly accepted way of making such comparisons is by comparing not percentages, but the logarithm of the ratio of the percentage and its complement, p/(1-p), called a logit. Using the background standardized percentages from table 6.3.2, a measure of effects can be made by a comparison of logits between sectors. The excess of the private school logit over the public school logit is a measure of the effect that private school attendance has on the likelihood of planning to attend college. This "effect" of course includes both any actual effect that type of school brings about in college plans and any selection effect that it is not captured by statistically controlling on family background.

Thus, a positive value for the difference between private and public school logits does not mean being in that particular type of school effects the development of college plans. Evidence of such an effect is shown by an increase in the difference between logits over the years in school.

Table 6.3.3 shows the difference in logits between each private school sector and the public schools, based on panels (b) and (d) of table 6.3.2. The results are very mixed. The data in panel (a) for the seniors shows a decline over grades for the Catholic schools and no increase for the other private schools. Thus the senior data suggest that being in a Catholic school has a lesser effect on increasing college plans than does being in a public school, and that being in an other private school has no greater effect.

But panel (b) for the sophomores presents evidence that conflicts with this. For the Catholic schools, the measure of effect does increase, suggesting that there is a greater effect of being in a Catholic school on growth in college plans than of being in a public school. The measure of effect again does not increase for other private schools, suggesting no greater effect of being in such a school on college plans.

A somewhat more reliable indicator of growth in college plans over time by these students can be obtained by combining the senior and sophomore retrospective data to obtain a single series beginning at grade 8 and continuing through grade 11. To create such a series, the difference in senior logits shown in panel (a) for grades 8 and 9 is averaged with the difference in sophomore logits shown in panel (b) for grades 8 and 9. The result is shown in panel (c). For the Catholic school students there is an increase in the gap between the public sector in the years preceding entry into high school, but from the eight grade on the gap changes a little. The difference between other private school students and public students also remains quite stable beyond eight grade. The end result of the analysis suggests there is little evidence of greater development of college plans for

TABLE 6.3.3

DIFFERENCES IN LOGITS FOR COLLEGE EXPECTATIONS, STANDARDIZED TO PUBLIC SOPHOMORES, BETWEEN EACH TYPE OF PRIVATE SCHOOLS AND THE PUBLIC SCHOOLS: SPRING 1980[a]

At Earlier Grade	Catholic	Other Private
a) Seniors:		
At 8th grade	.44	.16
At 9th grade	.44	.12
At 10th grade	.33	.12
At 11th grade	.35	.13
b) Sophomores:		
At 6th grade	.08	.12
At 7th grade	.20	.04
At 8th grade	.32	.12
At 9th grade	.34	.08
c) Sophomores and Seniors:		
At 6th grade (sophomores)	.08	.12
At 7th grade (sophomores)	.20	.04
At 8th grade (both)	.38	.14
At 9th grade (both)	.39	.10
At 10th grade (seniors)	.33	.12
At 11th grade (seniors)	.35	.13

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[a] Logit of percentage expecting to attend college, minus comparable logit for public schools.

private high school students than for public high school students.[1] For the Catholic-public comparison, the combined results of the retrospective accounts show a greater effect for Catholic schools, but as indicated earlier, the results show inconsistencies. There is also evidence here that the statistical controls on family background used to bring about comparability of public and private school students are largely successful in doing so. At the earliest grade for which the question was asked, grade 6, the actual percentage reporting college expectations were 40 for the public schools, 54 for the Catholic schools, and 59 for the other private schools, giving differences of 14 and 19 respectively. After standardization by the same seventeen background variables used in the analysis of achievement, these percentages become 40, 42, and 43, that is, almost alike. This indicates that according to these retospective accounts, students in each of the types of schools who are alike on the measured background characteristics also showed almost the same college expectations. This increases our confidence that their achievement was also alike at this earlier point, but has increased more in the private sector between the 6th and 10th grades.

Now we turn to the examination of educational expectations for students with high or low parental education. As in the case of cognitive achievement, the differential educational expectations of students with especially high or low parental education can be estimated by sector, through use of the regression analysis used for table 6.2.6. As before, the educational expectations of students with both parents having a high school education are compared with students whose parents both have college degrees, in each type of school. The results of the analysis are shown in table 6.3.4. The numbers refer to the scale of educational levels reported in table 6.3.1.

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[1] The logit analysis results presented in the appendix table A.4.10 differ in some respects from the estimates derived by ordinary least squares, but generally indicate the same patterns. Similar to the OLS results, the logit estimates show that the educational aspirations of Catholic school students develop more rapidly than public school students through the ninth grade, after which they develop at about the same rate. In contrast to the OLS results, though, students in the other private schools show consistently stronger development of college-going plans than public school students from the seventh through the tenth grades, with the largest relative gains occurring between the ninth and tenth grades.

The table shows that the educational expectations of students with high school educated parents are lowest if the students are in public schools, and highest if they are in Catholic schools. The difference at grade ten between Catholic and public schools is .56 educational levels, that between other private and public schools is .3 of an educational level.

For children of parents with college degrees, the expected education is higher in all sectors. But the difference between sectors is reduced by half between Catholic and public schools, and by about two-thirds between other private and public schools.

The lower panel of the table shows the difference in educational expectations between children of high- and low-education parents by school type. Here, the differences are greatest in the public schools and least in the Catholic schools with the other private schools in between. As with cognitive achievement, the Catholic schools come closest to meeting the ideal of the "common school." The public schools are furthest from this ideal. Children from differing educational backgrounds in Catholic schools are most alike in their educational expectations, while children from differing educational backgrounds in public schools are least alike in educational expectations. In other words, in the public schools, the educational plans of children with college-educated parents diverge more sharply from those of children with high school-educated parents than is true in any other type of school. The divergence is least in Catholic schools.

TABLE 6.3.4

ESTIMATED EDUCATIONAL EXPECTATIONS AT GRADES 10 AND 12 FOR STUDENTS WITH PARENTS OF DIFFERENT EDUCATIONAL LEVELS, DIFFERENT RACE, AND DIFFERENT ETHNICITY, OTHERWISE STANDARDIZED TO PUBLIC SOPHOMORE BACKGROUND[a]

SPRING 1980
(Standard error in parenthesis)

Comparison Category	Public Sector		Catholic Sector		Other Private Sector	
	10	12	10	12	10	12
1. Parental Education						
a. High school graduation ...	1.80	1.94	2.36	2.46	2.10	2.15
b. College graduation ...	2.80	2.89	3.05	3.09	2.90	3.12
2. Race and Ethnicity						
a. White/anglo ..	2.23	2.34	2.63	2.66	*	*
b. Hispanic	2.31	2.38	2.72	3.01	*	*
c. Black	2.44	2.64	2.98	3.11	*	*
3. Differences						
a. College vs high school parental education	.99 (.014)	.95 (.015)	.69 (.042)	.63 (.044)	.80 (.103)	.97 (.099)
b Anglo vs Hispanic	-.08 (.023)	-.04 (.026)	-.09 (.067)	-.34 (.071)	*	*
c. White vs Black	-.21 (.018)	-.30 (.020)	-.35 (.076)	-.45 (.079)	*	*

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[a] Standardization follows procedures used in 6.2.3.

*Sample size too small to estimate reliably.

The gains in educational expectations from the sophomores to the senior year are small in all sectors and for both levels of parental education. They are least in the Catholic schools. But, as indicated in previous analysis, the retrospective questions examined earlier probably give better information about the development of education plans than does the sophomore-to-senior comparison.

A similar comparison can be made for the public and Catholic sectors between blacks and whites and Hispanics and Anglos with comparable backgrounds. As is ordinarily found with plans or expectations for higher education, table 6.3.4 shows that blacks have higher expectations than whites of comparable backgrounds, and Hispanics have higher expectations than Anglos of comparable backgrounds (statistically significant in 6 of the 8 cases). Here the estimates of the amount by which blacks exceed whites and Hispanics exceed Anglos are greater in the Catholic sector (though the difference is statistically significant only in one of four cases).

6.4 Summary of Outcomes

This chapter has examined two kinds of outcomes in public and private schools: cognitive outcomes, as measured by standardized test scores in reading, vocabulary, and mathematics; and plans for after high school, primarily plans for further education. The first question regarding these outcomes, in section 6.1, was just how the sectors differ in these respects. The second question, in sections 6.2 and 6.3, was whether being in a private school made any difference in cognitive achievement or educational aspirations, or whether the greater achievement and aspirations in the private sector were wholly due to selectivity.

When answering these questions, the qualifications about the other private school sample must be kept in mind. The findings for the sample of other private schools may very well not be generalizable to the population of such schools because of the small sample size, the heterogeneity of that population, and the sampling problems discussed in chapter 1. With this important point in mind, we may turn to these questions.

The answer to the first question is that achievement is somewhat higher, in both the sophomore and senior years, in Catholic schools and in other private schools than it is in public schools. Achievement in the high-performance private schools is considerably higher than that in the high-performance public schools, and both are higher than in either of the private sectors.

The differences between sectors in educational expectations and aspirations are similar to the differences in achievement. The sectors are ordered in the same way, with public school students having the lowest educational aspirations and those in the high-performance private schools having the highest aspirations. For the other post-secondary activity--work--the order is reversed. Among seniors who planned to work full time after graduation, a higher proportion in the public schools already had a job lined up. This suggests that the greater vocational resources and opportunities in the public schools, as shown in chapter 4, lead to a better connection with the world of work for those students who are going into the full-time labor force.

The second question, which attempted to separate effects of private schools on achievement and aspirations from selection into private schools, is examined in several ways. In the examination of effects on achievement, statistical controls on family background are introduced, in order to control on those background characteristics that are most related to achievement. A large number of background characteristics is introduced, to control for selectivity-related differences. Although achievement differences between the private sectors and the public sector are reduced (more for other private schools than for Catholic schools), some differences remain. An examination followed of imputed growth from the sophomore to the senior year. Learning rates were calculated under three different sets of assumptions; two probably overestimate rates, thereby favoring the public sector relative to the private, and one probably underestimates rates, thereby favoring the private sectors relative to the public. Examining the ranges of these estimated rates shows that, under all assumptions, growth in vocabulary and mathematics achievement is greater in both private sectors than in the public sector. However, for the Catholic-public sector comparison in reading, the different estimates are in conflict. Thus the indication is that Catholic and other private schools have a non-trivial effect on bringing about higher cognitive achievement, wholly apart from their selectivity.

In addition, a greater homogeneity of achievement distinguishes Catholic schools from the public and other private schools. When students of parents with different educational backgrounds are compared, achievement levels are most comparable in the Catholic schools. Achievement levels are most divergent in other private schools, with public schools falling between the two private sectors. Also, the achievement gap between students from different educational backgrounds is less for seniors than for sophomores in Catholic schools, while it is slightly greater in public and other private schools. Controlling on parental income and education, a comparison of blacks and Hispanics in Catholic and public schools reveals several differences. As sophomores, these minority students achieve at a level closer to that of non-Hispanic whites in Catholic schools than in public schools. The achievement gap between blacks and whites and between Hispanic and Anglos is less for seniors than for sophomores in Catholic schools while it is slightly greater in public schools. Altogether, the evidence is strong that Catholic schools function much closer to the American ideal of the "common school," educating children from different backgrounds alike, than do the public schools.

Turning to educational aspirations, the question arises whether the private-public difference shown in section 6.1 is wholly due to selection or is in part due to effects of the sector. Statistical controls on family background leave a Catholic-public difference for sophomores that favors Catholic schools, but no public-other private difference. No differential sophomore-senior growth is found, except for lower growth in Catholic schools. This result is suspect, however, because of a ceiling effect due to the higher level of aspirations among Catholic school sophomores, and because of differential dropout. An analysis that uses retrospective reports of seniors and sophomores about expectations of attending college in earlier years indicates that there is no greater growth of expectations in Catholic and other private schools than in public schools, though the evidence shows some inconsistencies. The analysis indicates that the background-standardized proportion planning to attend college in the sixth grade was (according to retrospective accounts) nearly the same in all sectors, and that most of the divergence between high school students in the different sectors occurred during the high or middle school grades. Overall, the evidence concerning differential effects of different sectors on level of college aspirations is less consistent and conclusive than concerning achievement.

Again, the Catholic schools show much greater homogeneity in the educational aspirations among students from different parental education backgrounds than do other schools. Here the other private schools are not distinguishable from the public schools in the divergence of educational expectations of students with low and high educational backgrounds.

CHAPTER 7

FACTORS AFFECTING COGNITIVE ACHIEVEMENT IN HIGH SCHOOLS

It is not sufficient to say that students are performing better in one sector of secondary education than another. The central question, for all schools, is why some produce better cognitive outcomes than others. We will treat that question in this chapter--though not comprehensively--by examining the degree to which, within each of the sectors, students in schools that differ from the average school in that sector--in ways that private schools differ from public schools--achieve more highly. This will allow us to identify school policies which increase achievement within each sector.

There is an additional value to such an analysis: it allows another test of the private school effects found in chapter 6. If it is true that the private sector is, on the average, more successful in increasing achievement, then within each of the sectors students should achieve more highly in schools that differ from the average school in ways that private schools differ from public schools--but only, of course, in those ways that make a difference for achievement. If the higher levels of homework that characterize private schools (chapter 5) are effective in leading to higher achievement, then those schools that have high levels of homework, whether they are Catholic, public, or other private, should be higher in achievement than other schools of that sector. If private schools are not more effective for cognitive achievement, or if some aspect of private schools other than homework is responsible for higher achievement, then achievement should not be higher in such an analysis. If, for example, private schools are more effective, but it is their smaller size (as shown in chapter 2) that makes them so, then smaller schools in each sector, not schools with higher homework levels, should show higher achievement when student background is controlled.

Thus, this will be the general strategy: to examine the relations, within each of the sectors, of various factors that distinguish the Catholic and other private schools from the public schools. If certain of these factors do consistently make a difference in cognitive achievement, whatever the sector, then this is rather strong evidence both that the different school sectors do bring about differing achievement, and that one way they do so is through their difference on the factors that in the analysis show effects on achievement. The special value of this approach is that it can give some insight into the policies that, in any sector, affect achievement.

7.1 School size and achievement

For many years, educators have pointed to positive contributions of school size to achievement--for example, Conant's influential work, The American High School Today (1959). Yet, in the private and public school comparisons examined here, the enrollment and achievement patterns are opposite to those that prior research would have predicted: private schools tend to be smaller, yet they have higher levels of achievement. Thus, it is of some interest to know something about the effects of size within each sector.

It turns out that within each sector, size is positively related to achievement when family background and grade in school are controlled. The effect is very small and of marginal statistical significance in the public schools, and larger, but not statistically significant in the other private schools, but both larger and statistically significant in the Catholic schools. This is shown in table 7.1.1. Thus, it appears that public schools have a gain in achievement relative to private schools as a consequence of their larger size. The amount of gain they experience can be calculated by

TABLE 7.1.1

REGRESSION COEFFICIENTS FOR SIZE BY SECTOR AND SUBTEST, WITH PARENTAL EDUCATION, INCOME, RACE, HISPANIC ETHNICITY AND GRADE IN SCHOOL CONTROLLED: SPRING 1980

(Standard error for coefficient in parenthesis)

	Reading	Vocabulary	Mathematics
Public	-.02	.08	.07
	(.01)	(.01)	(.02)
R^2...........	.16	.20	.20
Catholic	.02	.15	.21
	(.04)	(.04)	(.08)
R^2	.05	.10	.07
Other Private	.15	.05	.23
	(.05)	(.05)	(.10)
R^2	.19	.23	.23

multiplying the regression coefficient for the effect of size by the difference in the average size of schools within sectors.[1] Table 7.1.2 shows the results of this analysis.

However, it may be that achievement gains associated with size could be depressed by school problems which accompany larger schools. Attendance problems, in particular, tend to be greater at large schools where it is difficult to monitor student behavior. The correlations of the three attendance problems with the logarithm of size is as given below in the three sectors:

	Public	Catholic	Other Private
Absenteeism	.02	-.02	.00
Lateness....................	.10	.00	-.20
Cutting class...............	.12	.00	.02

Statistical control of behavior problems in a regression of achievement on size is like a hypothetical experiment: what would be the effect of size on achievement _if_ school staff were able to control the behavior problems that are correlated with size? The absence of correlation with size in the private schools (or in the case of lateness, in other private schools, a negative relation to size) shows that the question is not

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[1] For this analysis, five family background variables (mother's education, father's education, family income, race, and ethincity), grade, and the logarithm of school size were regressed, by sector, on the three achievement subtests. In the calculation described in the text, regression coefficients for the public school sector are used. This is because, as will be evident in the discussion, we want to examine the gain or the loss that public schools could expect through a change in average size to that of private schools.

TABLE 7.1.2

ACHIEVEMENT DIFFERENCES IN PUBLIC SCHOOLS RELATIVE TO PRIVATE SCHOOLS DUE TO THE LARGER SIZE OF PUBLIC SCHOOLS, WITH PARENTAL EDUCATION, FAMILY INCOME, RACE AND HISPANIC ETHNICITY CONTROLLED: SPRING 1980

(Standard error of difference in parenthesis)

Subtest	Public Relative to	
	Catholic	Other private
Reading	-.01 (.01)	-.03 (.02)
Vocabulary	.04 (.01)	.11 (.02)
Mathematics	.04 (.03)	.10 (.04)

hypothetical for staff in private schools. They apparently are able to control the behavior problems that in the public schools increase with size. This may be due to the greater degree of overall control that private schools are able to exercise, or to the smaller size of the schools.

Table 7.1.2 shows the gains--or, in the case of reading, losses--that public schools experience in relation to Catholic and other private schools because of their larger size. But comparing that to table 7.1.4, in which these three attendance variables are controlled, shows that these gains are smaller than they would be--and the losses larger than they would be--with behavior problems controlled. (It should be emphasized that the true effect of size might be less than indicated in this analysis because large schools in the public sector are positively associated with certain background variables that have not been statistically controlled, such as parental expectations and small family size, both of which are positively related to achievement.)

The positive effect of size, assuming that it is a true effect, might be due to any of several factors. It was once assumed, in fact, that larger schools meant better education. The arguments were that greater depth and breadth of program is possible in large schools, that specialized classes dealing with advanced topics, and better laboratory facilities are possible in larger schools. All these points are true; but the data suggest that these virtues of size are, in public schools, largely cancelled out by the inability to manage behavior problems as school size increases--an inability that has very likely grown since Conant made his survey of high schools in 1958.

7.2 Student behavior, school climate and achievement

The preceding analysis included only a small number of background variables, and did not include other possible school factors that might be responsible for some of the differences found. Initially our strategy was to

TABLE 7.1.3

REGRESSION COEFFICIENTS FOR SIZE, BY SECTOR AND SUBTEST, CONTROLLING ON ATTENDANCE BEHAVIOR, PARENTAL EDUCATION, INCOME, RACE, HISPANIC ETHNICITY: SPRING 1980

(Standard error for coefficient in parenthesis)

	Reading	Vocabulary	Mathematics
Public	.00 (.02)	.09 (.02)	.12 (.04)
R^2...........	.17	.20	.21
Catholic	.01 (.04)	.15 (.04)	.20 (.08)
R^2	.07	.11	.09
Other Private	.15 (.05)	.06 (.05)	.23 (.10)
R^2	.22	.25	.26

TABLE 7.1.4

ACHIEVEMENT DIFFERENCES IN PUBLIC SCHOOLS RELATIVE TO PRIVATE SCHOOLS DUE TO SIZE WITH ATTENDANCE BEHAVIOR, PARENTAL EDUCATION, FAMILY INCOME, RACE AND HISPANIC ETHNICITY CONTROLLED: SPRING 1980

(Standard error of difference in parenthesis)

Subtest	Public Relative to	
	Catholic	Other private
Reading	-.00 (.01)	.0 (.02)
Vocabulary	.05 (.01)	.13 (.02)
Mathematics	.06 (.02)	.17 (.04)

proceed in this manner--examining, sequentially, the effects of various school factors that differ between public and private schools, in separate regression equations. However, the resulting correlations between these various school characteristics suggests such a procedure might easily lead to incorrect inferences, attributing effects to one factor in the schools that are due to a factor that is correlated with the first but not included in the equations.[1] Consequently, in this section, we conduct a single analysis for the basic school factors to be examined. In addition, to reduce to the lowest possible level any spurious inferences resulting from differences in family backgrounds that are correlated with school factors, all of the family background factors used for the analysis, reported in table 6.2.1, are included in subsequent analyses. For each characteristic of schools and school functioning that is a source of possible differences in public and private school effectiveness, the following pair of questions is asked:

1. What is the level of that characteristic in Catholic or other private schools, for students with the same subjective and objective background characteristics as the average sophomore public school student? For example, the overall average difference between Catholic school and public school sophomores in the the amount of homework they do is the difference between 5.56 hours a week in the Catholic schools and 3.75 a week in the public schools. But for Catholic school sophomores with the same subjective and objective characteristics as the average public school sophomore, the 5.56 hours a week is reduced to 4.92 hours a week.[2] Thus, the difference in levels of homework for

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[1] We are indebted to Thomas DiPrete who first brought this matter to our attention. His analysis for another report from the High School and Beyond project, Discipline and Order in American High Schools, suggested that this might be the case.

[2] The standardized estimates of school functioning were calculated as follows: for each grade in the public and private sectors, we estimated separate regression equations for each of the school functioning variables using the seventeen family background characteristics. A background-standardized estimate for the level of school functioning in each grade and sector was calculated using the means of the public school sophomore characteristics and the effects of these background characteristics in the respective sector and grade.

the same type of student between the public and Catholic schools is 4.92 - 3.75, or 1.2 hours a week of homework.

2. What would be the expected difference in achievement in public schools if the school factor were at the level at which it is found in Catholic or other private schools for students of a given background (i.e., the background of the average public school sophomore)? For example, what increment in achievement would we expect to find in the public schools if the average public school student spent 1.1 more hours on homework? This is obtained by multiplying the 1.1 hours by the regression coefficient for the effect of homework on achievement in public schools, controlling for the effects of family background characteristics and other school factors.

In section 7.2.3 we will ask the same pair of questions for the average Catholic school sophomore, in schools that are like the average public school in these same school characteristics. We defer that analysis to the later section because of its obvious lesser importance to American high school students. Because the public schools enroll 90% of the total population of high school students, the background of the average public school sophomore is nearly that of the average American high school sophomore generally.

There are two questions of interest for each of the school factors that might contribute to the public-Catholic or public-other private difference in achievement: What is the difference between the level of that factor in the Catholic or other private schools and public schools, for students like the average public school sophomore? And what would be the expected difference in achievement in the public schools if that factor were at the level found in the Catholic or other private schools, controlling on family background and other school factors? We address these questions in turn.

7.2.1 Differences in public and private school functioning for a student like the average public school sophomore

Five areas related to school functioning were examined as potential means through which private schools obtain different levels of achievement from comparable students. These include:

1. Different coursework. This was measured in two ways. For mathematics in the senior year, it was possible to measure coursework in mathematics as the total number of courses a student has taken among the following: algebra 1, algebra 2, geometry, trigonometry, and calculus. As chapter 5 showed, higher proportions of private school seniors than public school seniors have taken each of these courses. Unfortunately, for the reading and vocabulary tests, and for the mathematics test for sophomores, there is no comparable measure of coursework. Instead, for these tests, having taken an honors English course (for the reading and vocabulary tests) or an honors mathematics course (for the mathematics test) was used as the measure of coursework. This is a poor measure of coursework differences between public and private schools, both because the proportions of students having taken an honors course were very similar in the three sectors and because an "honors" course means very different things in different school contexts.

2. Homework. As chapter 5 showed, the amount of homework in Catholic schools is greater than in public schools, and the amount in the other private sector is greater yet. For both sophomores and seniors it was possible to estimate the actual hours per week spent on homework.

3. Attendance in school and class. Chapter 5 showed that students in Catholic schools were absent much less often and were much less likely to cut class than students in public schools. Students in other private schools were between the Catholic and public schools on these measures of behavior.

4. Disciplinary climate. As discussed in chapter 5, students were asked three questions related to the disciplinary climate of the school: how interested the teachers are in students, how effective is school discipline, and the fairness of school discipline. Each school was characterized by the average of the responses for all the students in that school, and these averages were then used as measures of the school disciplinary climate. As chapter 5 showed, there were some differences in the average disciplinary climates in the three sectors.

5. Student behavior in the school. The behavior of all the students in the school may have some effect on what individual students learn, even controlling on the student's own behavior. The items used as a measure of school behavior were the averages, over the school, of sophomore responses to four questions asking the extent to which certain types of behavior occurred in the school: students not attending school, students cutting classes, students fighting, students threatening or attacking teachers. Alternative measures of

attendance and cutting classes were obtained by averaging over the school the students' responses concerning their own attendance and cutting classes, and characterizing each student by the average in the school, excluding his or her own responses.

Chapter 5 showed the differences in the levels of these school characteristics in public and private schools. The differences in these characteristics for students from the same family backgrounds are of interest here. More specifically, the analysis examined the differences for students who are like the average public school sophomore, so that the levels of the school characteristics are standardized to the public school sophomore population. The importance of this question lies in the fact that the family backgrounds of public, Catholic, and other private school students differ in both objective characteristics, such as parental education and income, and in subjective characteristics, such as the amount of student conversation with parents about schoolwork. In most of these ways, students in public schools have backgrounds that are less conducive to achievement than do students in private schools. Since measures of school functioning are in part determined by the backgrounds from which the students come, measures of school functioning must be adjusted or standardized by family background so that differences in achievement related to student background are not attributed to effects of school policies.

The background-standardized measures of school functioning are shown in table 7.2.1. The table shows that, with very few exceptions, (all in the percent taking honors mathematics or honors English) the Catholic and other private schools are higher in those characteristics that appear to be conducive to achievement (homework, teacher interest, fairness, or effectiveness[1]) and lower in those that appear inimical to achievement

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[1] Sophomores were asked to evaluate the strictness of discipline; seniors, the effectiveness.

TABLE 7.2.1

DIFFERENCES BETWEEN PRIVATE AND PUBLIC SCHOOLS IN STUDENT BEHAVIOR AND SCHOOL CLIMATE, STANDARDIZED TO FAMILY BACKGROUND CHARACTERISTICS OF PUBLIC SOPHOMORE STUDENTS: SPRING 1980[a]
(Standard error of difference in parenthesis)

Item	Catholic Minus Public		Other Private Minus Public	
	Sophomore	Senior	Sophomore	Senior
a. Coursework completed by students				
Proportion taking honors English	-.02 (.011)	.01 (.013)	-.08 (.014)	-.08 (.017)
Proportion taking honors Mathematics	.02 (.011)	.02 (.012)	-.07 (.015)	-.03 (.017)
Average number of advanced mathematics courses	DNA	.71 (.034)	DNA	.34 (.045)
b. Homework completed by students				
Average number of hours per week	1.17 (.092)	0.78 (.100)	1.31 (.123)	1.27 (.133)
c. Attendance by individual students				
Absent from school	-.43 (.028)	-.39 (.033)	-.06 (.037)	-.16 (.043)
Cut class now and then	-.20 (.009)	-.21 (.013)	-.04 (.013)	-.08 (.017)
d. Disciplinary climate as perceived by students[b]				
Teacher interest	.39 (.008)	.40 (.009)	.50 (.011)	.51 (.012)
Fairness of discipline	.17 (.008)	.18 (.007)	.09 (.009)	.12 (.010)
Effectiveness/strictness of discipline	.59 (.008)	.59 (.008)	.31 (.010)	.31 (.011)
e. Student behavior in school as perceived by sophomores[c]				
Absenteeism	.65 (.007)	.66 (.008)	.55 (.010)	.56 (.010)
Cutting class	.79 (.010)	.80 (.011)	.54 (.014)	.53 (.014)
Students fighting each other	.39 (.007)	.38 (.007)	.55 (.009)	.56 (.010)
Students threatening teachers	.17 (.002)	.16 (.002)	.18 (.003)	.17 (.003)

[a] Family background characteristics controlled are the seventeen used in table 6.2.1. The numbers in the table are obtained by first multiplying public school sophomore background means by regression coefficients from the regression of the variable in question on family background to obtain the expected level of the variable in question for that population, using regressions carried out on private school sophomores, private school seniors, and public school seniors and then subtracting the public school value from the private school value.

[b] Climate variables aggregated to school level.

[c] Behavior variables aggregated to school level; a high value implies that students perceiving this as happening rarely or never.

(absenteeism, cutting class, fighting, threatening teachers). The differences are generally smaller than those found in chapter 5 because standardization of family background brings the student behavior in the private schools closer to that in the public schools. Yet the differences remain in the same direction as those in chapter 5, when student background was not controlled.

7.2.2 Differences in achievement attributable to level of school functioning for a student like the average public school sophomore

Given these differences, it becomes possible to estimate the effect on achievement of being in a Catholic or other private school through each of the types of differences. This will show, for example, the estimated gain in achievement if the amount of homework done by public school sophomores were the same as that done by Catholic school students with similiar backgrounds (that is, an extra 1.2 hours a week), but other measured characteristics of the school remained the same.

In this way some or all of the achievement differences between private and public schools shown in table 6.2.1 may be accounted for or explained. For example, in table 6.2.1, the reading achievements in Catholic schools of sophomores with backgrounds similar to those of public school sophomores is .32 items greater than that of the public school sophomores. This difference of .32 items may be due in part to the 1.2 hours more homework in the Catholic schools. Carrying out the calculations, it can be seen that public school sophomores who are average in all the other measured family background characteristics and in a school that is average in the measured school characteristics get .05 more items on the reading test correct if they do the same amount of homework as similar students (i.e., background-standardized) do in the Catholic sector.

In carrying out this examination, the amount of achievement explained by the variables in each of the five areas of school functioning is added to give a total explained by the measured characteristics in that area.[1] Thus, in the areas of coursework, homework, attendance, disciplinary climate, and student behavior, the analysis results in a number that is the amount of achievement difference between public and Catholic or other private schools that can be accounted for by the differences in the level at which that factor exists in each sector. If the number is positive, this means that the average public school student would gain in achievement if the public school operated at the same level as the average Catholic or other private school. If the number is negative, it means that the average public school student would have lower achievement if the public school operated at the same level as the average Catholic or other private school.

Table 7.2.2 shows the overall difference in achievement in reading, vocabulary, and mathematics in public and private schools, controlling on student background, taken from table 6.2.1, and the amount of achievement difference that can be accounted for by the differences in each of the five areas. The sum of these five differential achievements (labelled "total accounted for" in the table) is the amount of achievement difference accounted for or explained by all these measures of school functioning. If that sum is less than the overall difference in achievement, there remains an unexplained achievement difference between the private and the public sector. If the total accounted for is greater than the overall difference (as, for example,

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[1] In terms of calculations, this was estimated by multiplying the difference in the two levels of functioning (seen in table 7.2.1) by the relevant regression coefficients in the public sector.

TABLE 7.2.2

ACHIEVEMENT DIFFERENCES BETWEEN PRIVATE AND PUBLIC SCHOOLS DUE TO VARIOUS AREAS OF SCHOOL FUNCTIONING, FOR STUDENTS WITH FAMILY BACKGROUNDS LIKE THAT OF THE AVERAGE SOPHOMORE IN PUBLIC SCHOOLS: SPRING 1980[a]

	Catholic			Other Private		
	Reading	Vocabulary	Mathematics	Reading	Vocabulary	Mathematics
Sophomores						
Coursework	-.01	-.01	.04	-.06	-.06	-.17
Homework	.05	.04	.13	.06	.04	.15
Attendance	.04	.03	.15	.01	.01	.02
Disciplinary climate	-.03	-.08	-.17	.06	-.01	.13
Student behavior	.33	.11	.46	.33	.19	.57
Total accounted for	.38	.09	.61	.40	.16	.75
Overall (from table 6.2.1)	.32	.36	.58	.14	.33	.56
Seniors						
Coursework	.01	.01	1.08	-.06	-.06	.47
Homework	.04	.03	.02	.07	.05	.03
Attendance	.02	.00	.04	.01	.00	.02
Disciplinary climate	.01	.00	.02	.10	.07	.01
Student behavior	.20	.01	.25	.18	.11	.41
Total accounted for	.28	.05	1.41	.30	.17	.94
Overall (from tables 6.2.1 and 6.2.2)	.24	.56	.60	.40	.51	.74

[a] Standard errors are not calculated for this table and the next because of the special complications in doing so—since the school-functioning differences used in calculating the achievement differences are sample estimates (see table 7.2.2) as are the regression coefficients also used in the calculation.

with reading achievement for sophomores in the Catholic-public comparison--.32 overall difference and .38 accounted for), this suggests that there are other unmeasured school factors that partly compensate for the effects of these factors but are not included in the analysis--or that the characteristics of school functioning make more difference within the public sector than within the private sector. It is clear that the present analysis is imperfect, certainly excluding some factors that either augment or depress achievement in the public schools.[1]

Despite the existence of some differences between the overall differences and the total accounted for, the results shown in table 7.2.2 give an idea of the sources of the difference in achievement between the public and private sectors. Differences in the level of homework account for a small but consistent part of the differences in achievement; differences in the student's own attendance patterns account for a smaller part. The effects of differences in the disciplinary climate are inconsistent in direction and size. The effects of coursework are difficult to assess, since the measurement is weak except in the senior year for mathematics, where the taking of specific courses was measured and where the effect of coursework on achievement was found to be great. The one area in which the effect of public-private differences is most consistently strong is student behavior.

These measures of student behavior are school-level measures and it is important to clarify exactly what they refer to. To some degree, the student's own behavior is statistically controlled through the two measures of the student's own attendance, which constitute part (c) in table 7.2.1. If the student's own behavior were fully controlled statistically, we could attribute this student behavior effect wholly to the effect of behavior problems among other students on the student's own achievement. As it is, such an inference is somewhat speculative, since the student's own behavior is not well controlled statistically. Yet there is a definite indication that these may be not only an interference of the student's own misbehavior on that same student's achievement, but also an effect of the general level of behavior disorder on the achievement of even those students whose behavior is good.[1]

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[1] This is especially true for advanced mathematics courses, where the regression coefficient is 1.40 in the private sector and 1.51 in the public sector.

A student's achievement may be affected by other students' behavior in several ways. Some of these are not completely understood, but the time a teacher must devote to disciplining students rather than teaching, how much repetition of material is required to have most of the students understand new material, and the distractions that disorder in the school impose on the student may all have an effect.

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[1] It is not fully clear just what is measured by these perceptions of student behavior. They are not direct measures of the actual rates of behavior problems, and they may be measures of some more subtle difference in the disciplinary character of the school. We conducted a partial test of this question for two of the four measures used in this analysis. Direct measures from the students are available for absenteeism and cutting classes. For each student we calculated a measure of the average absenteeism and percent who cut classes among the students in that student's school who were in the survey, excluding the student's own responses to these two questions. The effects of these two measures of attendance, as they differ between the public and private sectors, can be compared to the effects of the two measures obtained from sophomores' perceptions. Background-standardized differences between the public sector and the two private sectors on these two measures of attendance were calculated and the actual school-level behavior for each student was substituted in the general equation used in preparing table 7.2.2. The differences between the effects of sophomore perceptions of attendance behavior and the actual average attendance behavior of all other students was twofold. We found the effects of students' actual behavior (absences, cutting classes) to be consistently negative, but, generally, the amount of loss or gain in achievement is lower. This suggests that, although something more than actual student attendance is captured by the student perception of behavior, actual average school attendance does have a negative effect on school achievement.

In one of the areas, disciplinary climate, the inconsistent results present something of a puzzle. If the lesser degree of student behavior problems in private schools does make a difference in achievement then presumably the disciplinary differences between the public and private sectors should as well, because they influence student behavior. The last dependent clause may be the key to the puzzle of why disciplinary differences show inconsistent, sometimes negative effects. By statistically controlling student behavior and homework, we controlled on the intervening variables through which the school's disciplinary climate should have its effect. Thus the very paths through which a disciplinary climate can have its principal effect have been excluded from consideration in assessing the effect of the disciplinary climate. To see the true effect of the disciplinary-climate differences between public and private schools, we should examine not only their direct effect, but also their effect through student behavior.

A portion of this is shown in table 7.2.3 part (a), which presents the effect of public-Catholic and public-other private differences in disciplinary climate on the four items of perceived student behavior that were shown in table 7.2.1 part (e), again for a standardized public school sophomore student body. This does not capture the effects of disciplinary climate through the two measures of individual student behavior included in the analysis--that is, homework and attendance--but it does capture the effects through the paths of the four aspects of student behavior as perceived by sophomores.

Table 7.2.3 part (b) shows just how much of the differences in perceived absenteeism, class cutting, student fights, and threatening teachers between the public sector and the two private sectors can be accounted for by differences in disciplinary climate (see table 7.2.1 for the three items of disciplinary climate), for both sophomores and seniors. These "discipline-

TABLE 7.2.3

DIFFERENCES BETWEEN PRIVATE AND PUBLIC SCHOOLS IN LEVELS OF BEHAVIOR PROBLEMS DUE TO DIFFERENCES IN LEVELS OF DISCIPLINARY CLIMATE AND IN ACHIEVEMENT THROUGH EFFECTS OF BEHAVIOR PROBLEMS, WITH STUDENT BACKGROUND STATISTCALLY CONTROLLED:[a] SPRING 1980

	(a) Effects of Disciplinary Climate Differences	
	Catholic-Public	Other Private-Public
Sophomores:		
Effects on:		
Mean perceived absenteeism	.18	.13
Mean perceived cutting class	.29	.16
Mean perceived student fights	.15	.14
Mean perceived threaten teachers	.14	.11
Seniors:		
Effects on:		
Mean perceived absenteeism	.17	.13
Mean perceived cutting class	.19	.14
Mean perceived student fights	.14	.14
Mean perceived threaten teachers	.13	.10

	(b) Effects Through Behavior Problems in Achievement					
	Catholic			Other Private		
	Reading	Vocabulary	Mathematics	Reading	Vocabulary	Mathematics
Effects for:						
Sophomores	.13	.07	.25	.10	.07	.22
Seniors	.06	-.01	.13	.06	.04	.16

[a] Family background characterics controlled are the seventeen used in table 6.2.1 and listed in section 6.2.2.

related" differences in behavior can be compared to part (e) of table 7.2.1, to see what proportion of the difference in behavior is accounted for by these items of disciplinary climate. For example, the total difference between public and Catholic schools at the sophomore level in perceived absenteeism is **sixty-five** percent and the difference accounted for by disciplinary climate is .18, or twenty eight percent of the total. (It is important not to conclude that only this much of the variation in background-standardized attendance is a consequence of the discipline in the school; the three items used as indicators must certainly be only weak indicators of the disciplinary character of the school.)

With this information, it is possible to estimate the effect of the disciplinary climate through four aspects of school-level student behavior. This is shown in part (b) of the table. In nearly all cases, the positive effects of disciplinary climate through student behavior outweigh the negative direct effects shown in table 7.2.2. Thus, through the aspects of behavior shown in table 7.2.3 the disciplinary-climate differences between the public and private sectors lead to greater achievement in the private sectors, though the imperfections of measurement have very likely masked part of the effects.

7.2.3 Differences in school functions and in achievement attributable to school functioning for students like the average Catholic school sophomore

In the previous section we estimated school functioning differences for the average public school sophomore and the achievement losses associated with this different functioning in the public sector. Yet another question is whether school functioning differs for different types of students in each sector. In this section we discuss school functioning for a student with the average family background characteristics of Catholic school sophomore and its effect on achievement differences between the public and private sectors.

First, then, we ask what is the difference in the level of school functioning in the public and private sectors for this type of student? Table 7.2.4 shows these differences between Catholic and public schools and between other private and public schools. We find that in both private sectors students like the average Catholic school sophomore complete more homework, are absent less often, and are generally attending a school where the disciplinary climate is perceived more favorably and where there is less student misbehavior. The differences between table 7.2.3 and table 7.2.1 can be thought of as an interaction measure: the interactions of family background and school sector on level of functioning. Comparing the two tables, it is clear that this interaction is slight. The Catholic-public differences tend to increase slightly when the standardization is carried out to the average Catholic sophomore. The other private-public differences also tend to increase by this standardization, but somewhat less consistently than is true for the Catholic-public comparisons. Only in the cases of teacher interest, fairness of discipline, and perceived absenteeism do the differences between table 7.2.1 and table 7.2.4 appear to be non-trivial. In these few cases we can say that the sectors differ more for higher socioeconomic students (represented by the standardization to the average Catholic sophomore) than for the lower socioeconomic students.

The second question asks what would be the change in achievement outcomes if public schools increased their level of functioning for a student with the background characteristics of the average Catholic school sophomore. It is important to emphasize the limited nature of this question: we are asking, what is the effect of a given level of school functioning in the public sector for a student like a Catholic sophomore as compared with his or her expected achievement in the average Catholic or other private school?

TABLE 7.2.4

DIFFERENCES BETWEEN PRIVATE AND PUBLIC SCHOOLS IN STUDENT BEHAVIOR AND SCHOOL CLIMATE, STANDARDIZED TO FAMILY BACKGROUND CHARACTERISTICS OF CATHOLIC SOPHOMORE STUDENTS[a] SPRING 1980
(Standard error of difference in parenthesis)

Item	Catholic Minus Public		Other Private Minus Public	
	Sophomore	Senior	Sophomore	Senior
a. Coursework completed by students				
Proportion taking honors English	-.04 (.009)	.00 (.010)	-.09 (.018)	-.09 (.022)
Proportion taking honors Mathematics	.02 (.009)	.03 (.010)	-.06 (.020)	-.03 (.022)
Average number of advanced mathematics courses	DNA	.61 (.027)	DNA	.24 (.060)
b. Homework completed by students				
Average number of hours per week	1.27 (.075)	.96 (.079)	1.40 (.161)	1.45 (.175)
c. Attendance by individual students				
Absent from school	-.41 (.024)	-.41 (.026)	-.04 (.049)	-.18 (.056)
Cut class now and then	-.19 (.008)	-.21 (.010)	-.02 (.017)	-.08 (.022)
d. Disciplinary climate as perceived by students[b]				
Teacher interest	.44 (.014)	.44 (.007)	.54 (.012)	.55 (.016)
Fairness of discipline	.21 (.005)	.21 (.006)	.13 (.012)	.15 (.013)
Effectiveness/strictness of discipline	.62 (.006)	.61 (.007)	.33 (.014)	.34 (.015)
e. Student behavior in school as perceived by sophomores[c]				
Absenteeism	.69 (.006)	.70 (.006)	.59 (.013)	.60 (.014)
Cutting class	.80 (.008)	.80 (.008)	.55 (.018)	.54 (.019)
Students fighting each other	.42 (.006)	.42 (.006)	.58 (.012)	.60 (.013)
Students threatening teachers	.16 (.002)	.15 (.002)	.16 (.011)	.16 (.004)

[a] Family background characteristics controlled are the seventeen used in table 6.2.1. The numbers in the table are obtained by first multiplying public school sophomore background means by regression coefficients from the regression of the variable in question on family background to obtain the expected level of the variable in question for that population, using regressions carried out on private school sophomores, private school seniors, and public school seniors and then subtracting the public school value from the private school value.

[b] Climate variables aggregated to school level.

[c] Behavior variables aggregated to school level; a high value implies that students perceiving this as happening rarely or never.

Thus in comparing achievement, this contrast takes into account the effect that a higher family background has on achievement in the public sector as well as the effect of any given level of functioning.[1]

Table 7.2.5 shows the results of this analysis. In general we find fewer differences in achievement outcomes for this type of student than that found in our previous analysis for students like public school sophomores. It appears that a student's higher socioeconomic family background compensates to some degree for the lower level of functioning in the public sector, except in the area of student misbehavior. Here achievement gains in both private sectors are generally large. Coursework for seniors also brings about higher mathematics achievement in the private sectors. Other areas of school functioning appear to be less important to these achievement differences among students like Catholic sophomores, though indirect effects of disciplinary climate (through student behavior) shown in table 7.2.3 are still relevant to this type of student.[2]

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[1] An estimated $\hat{Y}$ for students like the average Catholic school sophomore was calculated using the public sector regression coefficients and the Catholic sophomore means for the 17 family background characteristics, the mean level of functioning (for example, homework) found in the public sector for that type of student, except in the case of the function under consideration. In this latter case, the mean level of school functioning in the Catholic or other private sector for this same type of student was used.

[2] Another way to consider the differences in public and private school functioning is to ask what would be the achievement losses for an average public school sophomore if he attended a private school that functioned like the average public school. An answer to this question both provides a partially independent check of the inferences made in the text on the basis of table 7.2.2 and gives some idea of the sensitivity of achievement in the private sector to each of these areas of school functioning. Appendix table A.4.15 shows the expected achievement losses in private schools that function at the level of public schools for the average public school sophomore in the five ways discussed in the text. Thus this analysis uses the private sector regression coefficients together with differences shown in table 7.2.1.

Without going into detail, the results are generally consistent with those of the public school analysis shown in table 7.2.2. However, the total rows show that achievement in the private sector is considerably more sensitive to the school's functioning than achievement in the public sector.

TABLE 7.2.5

ACHIEVEMENT GAINS OR LOSSES IN PRIVATE RELATIVE TO PUBLIC SCHOOLS FOR STUDENTS WITH FAMILY BACKGROUNDS LIKE THAT OF THE AVERAGE SOPHOMORE IN CATHOLIC SCHOOLS: SPRING 1980

	Catholic			Other Private		
	Reading	Vocabulary	Mathematics	Reading	Vocabulary	Mathematics
Sophomores						
Coursework	-.02	-.02	.04	-.06	-.06	-.13
Homework	.06	.04	.14	.07	.05	.16
Attendance	.04	.03	.14	.00	.00	.02
Disciplinary climate	-.03	-.08	-.18	.05	-.01	.12
Student behavior	.34	.12	.48	.34	.19	.58
Total accounted for	.38	.09	.62	.40	.16	.74
Overall (from table 6.2.1)	.32	.36	.58	.14	.33	.56
Seniors						
Coursework	.00	.00	.93	-.06	-.07	.33
Homework	.05	.04	.03	.08	.06	.04
Attendance	.02	.00	.04	.01	.00	.02
Disciplinary climate	.01	.00	.00	.10	.07	.00
Student behavior	.20	.02	.27	.19	.12	.42
Total accounted for	.30	.07	1.27	.32	.18	.81
Overall (from tables 6.2.1 and 6.2.2)	.24	.56	.60	.40	.51	.74

[a] Standard errors are not calculated for this table because of the special complications in doing so--since the school-functioning differences used in calculating the achievement differences are sample estimates (see table 7.2.2) as are the regression coefficients also used in the calculation.

7.3. School program enrollment and achievement

One of the aspects of school functioning that has a strong potential for affecting achievement is the placing of students in different programs. Generally, high school programs in the United States are identified as academic, general, or vocational. Academic programs are designed to provide credentials for admission to a four-year college, while general and vocational programs are not (although college admissions requirements have become so flexible that successful completion of an academic program is not now a prerequisite for admission to some four-year colleges). Vocational programs contain much more non-classroom curricular content than do general programs.

Yet placement in a particular program is not merely a potential determinant of subsequent achievement. It is also an indicator of past achievement and of future intentions. Because it is such an indicator, if schools in each sector used the same criteria in placing students in different programs it would be appropriate to use the student's program in school as an additional statistical control to eliminate bias due to selection.

There are, then, potentially two ways related to a student's program in which different schools can have different effects on achievement. If the program a student is in has an effect on that student's achievement, then schools with different policies for placing students in programs will produce different levels of achievement--even if they start with the same students. Second, programs labelled as academic (or general, or vocational) in one school may have different effects than a program labelled as academic (or general, or vocational) in another school.

The examination of school program can thus be of value in the study of differential effects of private and public sector schools in three ways. It can show whether the effects of the private sectors we have found can be explained merely as private schools' enrolling more students who, whatever sector they were in, would be in an academic program. Second, it can show whether there appear to be different policies in different sectors for placing students in different programs. Third, it can show whether the consequences for cognitive achievement of being in a given program differ from sector to sector.

If schools in each sector use the same criteria in placing students in the different programs, and if the levels of cognitive achievement in a given program are the same in each sector, then the apparent effect of the private sector is merely due to initial selection of students. If either (or both) of these is not true, then the private sector has effects on achievement in either or both of the two ways described above.

The first question, then, is; Do schools in the three sectors use the same policies for placing students in the different programs? As a first indicator, let us suppose that the sophomore percentages enrolled in each program reflect only background differences in the three sectors, and not differences in school policy. Then we may get an indication of policy differences in the three sectors in moving students between programs by comparing the percentage of seniors in each program with the percentage of sophomores.

As we see in table 7.3.1 at the sophomore level, 30 percent of the public schools students are in an academic program, as are 62 percent of the Catholic school students, and 57 percent of the students in other private schools. For seniors, the percentage in an academic program in the public schools is 35 percent, in the Catholic schools 70 percent, and in the other private schools 70 percent--increases of 5 percent, 8 percent, and 13 percent, respectively. Since the dropout rate between sophomore and senior years is

TABLE 7.3.1

PERCENTAGE DISTRIBUTION FOR STUDENTS ENROLLED IN ACADEMIC, GENERAL OF VOCATIONAL PROGRAMS, BY GRADE AND TYPE OF SCHOOL: SPRING 1980

Type of Program	Public		Catholic		Other Private	
	10	12	10	12	10	12
Academic	30.2	34.5	61.8	69.5	57.2	70.4
General	47.2	39.0	32.4	21.0	37.2	21.6
Vocational	23.6	27.5	5.8	9.5	5.5	7.9

larger in nonacademic programs and is about twice as high in the public as the private sector, we would expect to see a greater increase in the percentage in an academic program in the public schools. But the reverse is true. Students in the private sector move into an academic program from their sophomore to their senior year, but comparable proportions of the public sector students are not making that move. This suggests that program placement policies do indeed differ in the public and private sectors.

The same question can also be examined through an analysis which statistically controls on family background and also asks whether there is a remaining sector effect on being in a given program. When being in an academic program as a senior was itself taken as a dependent variable in the public and Catholic schools, with the 17 background characteristics and school sector as independent variables, school sector was the strongest predictor.[1] With all these background characteristics controlled, a student in a Catholic school was still 25 percent more likely to be in an academic program than a student in a public school.

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[1] For reasons discussed in chapter 6, section 6.2.2, the appropriate logit analysis was not used here.

Moreover, the assumption granted earlier--that the sophomore program placement is purely a function of background and ability, and independent of school policy--is a very dubious one. If, for sophomores, being in an academic program is taken as a dependent variable with the 17 background factors which include both parents' expectations about college attendance and school sector as independent variables, Catholic school sophomores are 21 percent more likely to be enrolled in an academic program.

The second question, concerning school program policies, asks how students perform in the same program and from comparable backgrounds in public schools, Catholic schools, and other private schools. This assumption will introduce a bias against the private sector because the data discussed above strongly suggest that some students who would be in a general or vocational program in the public sector are in an academic program in the private sector.

Such an analysis was conducted only for the academic and general programs since vocational programs are infrequent in the private sector, and only for the public and Catholic schools. Using the same procedures and background variables used in previous analyses, and adding dummy variables for enrollment in vocational or general programs, achievement was estimated for students in academic and general programs in both the Catholic and public sectors, for students with backgrounds standardized to the average public school sophomore.

Table 7.3.2 shows that sophomores in academic programs in Catholic schools achieve at higher levels than their counterparts in the public sector, and that the differences for students in academic programs are statistically significant for all three tests. At the senior level the differences are in

TABLE 7.3.2

DIFFERENCES IN ACHIEVEMENT IN PUBLIC AND CATHOLIC SCHOOLS WITHIN SCHOOL PROGRAM, FOR STUDENT WITH AVERAGE BACKGROUND OF PUBLIC SCHOOL SOPHOMORE: SPRING, 1980

(Standard error of difference in parenthesis)

Subtest	General Program		Academic Program	
	Sophomore	Senior	Sophomore	Senior
Reading	.248 (.080)	.181 (.089)	.138 (.055)	.126 (.068)
Vocabulary ..	.306 (.064)	.397 (.076)	.235 (.058)	.399 (.059)
Mathematics .	.641 (.129)	.492 (.159)	.217 (.094)	.001 (.125)

the same direction, but are statistically significant only for vocabulary. In general programs, students in Catholic schools achieve more highly than those of comparable backgrounds in public schools in all three tests in both grades. In this case, the differences are statistically significant for all three tests in both grades. Furthermore, as the table indicates, the between-sector differences are consistently greater for students enrolled in the general program.

Thus, while there is evidence that students in an academic program from comparable backgrounds achieve somewhat more highly in Catholic schools than in public schools, the greater gap appears to exist in the general program. Consistent with this, students in a general program appear to be subjected to greater demands in Catholic schools than in public schools. Table 7.3.3 shows that when comparing coursework for seniors with comparable backgrounds in general programs, those in the Catholic sector take an average of .65 more advanced mathematics courses than seniors in the public sector. Absenteeism and cutting classes also show differences for the general program

TABLE 7.3.3.

DIFFERENCES BETWEEN CATHOLIC AND PUBLIC SCHOOLS IN STUDENT BEHAVIOR BY SCHOOL PROGRAM AND GRADE, STANDARDIZED TO FAMILY BACKGROUND CHARACTERISTICS OF PUBLIC SOPHOMORE STUDENTS:[a] SPRING 1980

	Academic		General	
	10	12	10	12
a) Coursework completed by students				
Percent taking honors English	-.10	-.06	-.03	.01
Percent taking honors mathematics	-.04	-.03	-.02	.01
Average number of advanced mathematics courses	DNA	.45	DNA	.65
b) Homework completed by students				
Average number of hours per week	1.18	.47	.93	.49
c) Attendance by individual students				
Absent from school	-.36	-.28	-.46	-.52
Cut class now and then ..	-.14	-.16	-.22	-.22

[a] Family background characteristics used in the analysis are the same seventeen characteristics identified in section 6.2; standardization procedures and estimated level of functioning follow those outlined for table 7.2.1.

students.

Thus, differences in school program placement policies make it more likely that students, whatever their background characteristics, will be placed in an academic program if they attend a Catholic school rather than a public school. Even though this is the case, students who are in academic programs in Catholic schools do better than students from comparable backgrounds in public schools in most comparisons, and at least as well in the others. It is for the students in the general program that being in a Catholic school makes the most difference in achievement.

Altogether, answers to the questions with which we began this section on school programs all point in the direction of greater effects of the private sectors than of the public sector on achievement. The student's program does not account for private-public differences in achievement. Private-sector policies put students in an academic program who would be in a general or vocational program in a public school. And then examining student achievement in academic and general programs in public and Catholic schools shows that achievement is consistently higher within each program in the Catholic schools.

The earlier sections of this chapter showed that there are at least two important ways in which private schools produce higher achievement outcomes than public schools. First, given the same type of student (i.e., with background standardized), private schools create higher rates of engagement in academic activities. School attendance is better, students do more homework, and students generally take more rigorous subjects (i.e., more advanced mathematics). The first two of these factors provide modestly greater achievement in private schools. The third, taking advanced mathematics courses, brings substantially greater achievement. The indication is that more extensive academic demands are made in the private schools, for comparable students, leading to more advanced courses and thus to greater achievement. This is a somewhat obvious conclusion, and the statistical evidence supports it. Second, student behavior in a school has strong and consistent effects on student achievement. Apart from mathematics coursework for seniors, the greatest differences in achievement between private and public schools are accounted for by school-level behavior variables (i.e., the incidence of fights, students threatening teachers, etc.). The disciplinary climate of a school, that is, the effectiveness and fairness of discipline and teacher interest, affects achievement at least in part through its effect on these school-level behavior variables.

Although these answers are only partial, in that additional school factors may also explain the different outcomes in the sectors, they strongly suggest that school functioning makes a difference in achievement outcomes for the average student. And private schools of both sectors appear to function better in the areas that contribute to achievement.

This is not, however, equivalent to saying that policies which would facilitate enrollment in private schools would increase the average levels of achievement among American high school students. That is a much more complex question, and one that requires examining more fully the paths through which private schools may have their effects. The next section sketches out these paths, to indicate the kind of information necessary to answer the policy questions.

7.4. Models of school effects on cognitive achievement

By specifying the possible paths through which private schools may bring about greater achievement, we can locate the results of the present report within that overall framework.

Figure 7.4.1 describes the possible ways that school sector may affect the achievement outcome of students. Our focus in this last chapter has been on school policies. The graph indicates first how school policies can affect achievement. School policies, such as level of homework, curriculum, and disciplinary practices, indirectly affect a student's achievement by influencing that student's behavior (see path 10). This is the most straightforward path. In addition, those policies directly affect student achievement (illustrated by path 11) and include such factors as teachers' skill or commitment. School policies can also affect a given student's achievement through their impact on other students' behavior (via path 9). That is, the same policies that increase one student's homework or decrease that student's absence or disorderly behavior can be intensified through the medium of other students' behavior (illustrated by the sequence of paths 9 and 12). This report suggests that these school policies vary between sectors, (particularly in the public and other private sector), as well as within sector, and are indeed related to student achievement.

There is, however, another path through which school type and school policies affect achievement: through the background and behavior of other students (see sequences 4-7-12-13 and 4-6-9-12-13). With a given level of tuition, coupled with a given income distribution, and specific policies of student selection, the school type "determines" the distribution of other students in the school. These background variables greatly affect the other students' behavior in the school (path 7), and may directly affect school policies (path 6), which in turn affect student behavior (paths 9 and 10). Other students' behavior can affect a given student's achievement in either of two ways: through their direct effect on that student's behavior (path 12),

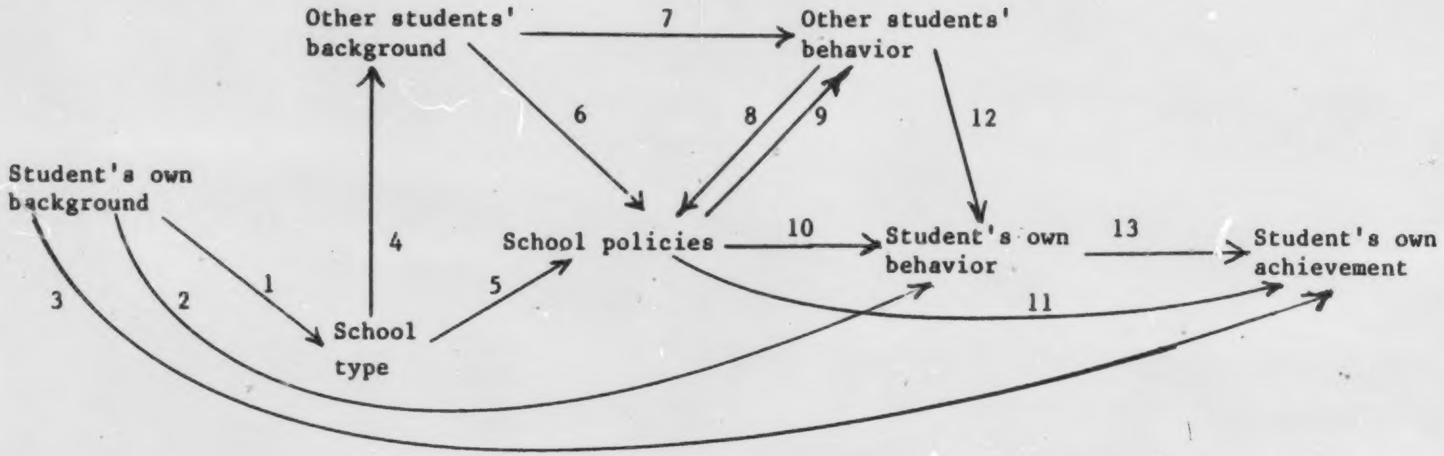
Other students' background
Other students' behavior
Student's own background
School policies
Student's own behavior
Student's own achievement
School type
1
2
3
4
5
6
7
8
9
10
11
12
13

FIGURE 7.4.1

GENERAL MODEL OF STUDENT ACHIEVEMENT

(for example, a hard-working and committed student body will ordinarily generate commitment among its incoming members); or through school policies (path 8). A disobedient or truant student population can impede academic and disciplinary policies to the point that the demands are relaxed and the policies accommodated to the students' behavior. This is one aspect of the change that many schools underwent during the student revolt of the late sixties and early seventies.

If private schools were available to a larger segment of the population, then the effect of this alternative path, from school type to other students' background (path 4) becomes important to the question of whether achievement will be increased. In part, what is at issue in disagreements about the effects on achievement of making private schools available to a broader range of students lies in implicit beliefs about the relative importance of paths 4, 6, 7, 8, and 12 compared to 5, 9, 10, and 11. If the principal effect of the school type on achievement is through the sequence 4-7-12-13, or 4-7-8-10-12-13, or 4-6-10-13, then such broadening of availability would have little impact on achievement because the policy change would disrupt path 4. If a large component of the effect is through paths 5, 9, 10, and 11, then such increased access to private education should not dilute the school's impact on achievement. Furthermore, if the effects are through 9, 10, and 11, then any change that resulted in the appropriate changes in school policies, whether or not it had anything to do with private schools, would be effective in increasing achievement. Thus, where such things as curriculum and disciplinary policies have effects on student behavior and achievement that are independent of school type and student background, we can institute changes in any school that would affect achievement. It is for this reason that the results in this chapter are as relevant to public schools as they are to private schools.

It is useful to review, in light of this path diagram, just what our analysis in the present chapter and earlier ones is designed to do in separating out the different type of effects. Tables 5.3.1 and 5.3.3 and Figure 5.3 showed the combined effects of path 5 from school type to school policies, and 4-7-8--that is, from school type through background through student behavior to policies. Similarly, tables 5.4.1, 5.4.4 and 5.4.5, and figure 5.4.1 show the combined effects of school policies to student behavior, and 4-7, 4-6-8 (and 4-7-12) from school type through student backgrounds to student behavior.

Table 7.2.1 is designed to separate out [in part (d)] the part of school type effect on school policies (called disciplinary climate in this chapter) that operates through path 5 and eliminates that part which operates by paths 4-6 or 4-7-8. That was done by statistically adjusting the policy differences between public and Catholic or between public and other private for differences in student background. The values shown in part (d) of table 7.2.1 are estimates of the amount of school policy (i.e., "disciplinary climate") difference due to school type directly through path 5.[1]

Similarly, parts (a), (b) and (c) are estimates of the effect of school type on the student's own behavior through school policies (paths 5-10 and 5-9-12) uncontaminated by the path 1-2--that is, by the student's own background). For example, the difference in homework done by sophomores in Catholic schools and sophomores in public schools is 1.9 hours per week; .8 hours of this is accounted for by differences in family background, and 1.1 remains as the estimated differences due to policy differences between the two sectors. The diagram shows, however, that there is another uncontrolled path through which the observed difference due to school type might operate: path 4, and from there via path 7 or 6. What should be controlled in order for the values in rows 1, 2, and 3 to reflect only the effects through paths 5-10 and 5-9-12 is not only the student's _own_ background, but also the backgrounds of other students in the school. If that had been done in table 7.2.1 then the values in these rows would be estimates of the effect of school type via path 5-10 and 5-9-12.

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[1] The dependent variables in this analysis are school means of perceived policies, and thus did not differ within school. Consequently, even though the individual's background was statistically controlled, the effect is to control the backgrounds of all students. Thus the effects controlled out in the analysis are those through paths 4-6-12 plus a path (not shown) from student's own background to school policy.

Part (e) of table 7.2.1 is intended to provide estimates of the effect of school type via path 5-9 to other students' behavior, by controlling on other students' backgrounds and thus blocking path 4-7.[1] However, some of the items in this area not only include other students' behavior, but also the student's own. As a consequence, the items in part (e) are measures of the effect of school type via both paths 5-10 and 5-9.

Then, table 7.2.2 is designed to show the direct effects of school types on achievement through the student's behavior (rows 1, 2, 3 in the table; paths 5-10-13 and 5-9-12-13), through school policies directly (row 4) in the table; paths 5-11) and through the student body behavior (row 5) in the table; path 5-10). The last of these is ambiguous. If the measures were indicative of average student behavior in the school, they could then be modified to exclude the student's own behavior, and would truly be measures of other students' behavior in the school. Consequently, a regression analysis including the student's own behavior and the other students' behavior, measured in this way, would give the effects of his own behavior on his achievement and the effect of other students' behavior on his achievement. The ways in which the latter might occur are numerous but, perhaps most importantly, behavior in the classroom affects how much the teacher can teach and the level of distraction for any given student.

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[1] Since the dependent variable is at the level of the school in these cases, the student backgrounds controlled in this analysis effectively become the aggregate student background in the school.

However, since the components of "student behavior" as measured and used in tables 7.2.1 and 7.2.2 are averages of student perceptions about behavior problems in the school, and because for two of these (fights among students and students threatening teachers) there are no measures of the individual's own behavior, the effects shown for "student behavior" in table 7.2.2 cannot be unambiguously interpreted as effects of other students' behavior. Nevertheless, it appears likely that some part of this effect (which is the strongest shown in the table in nine of the twelve analyses) is due to other students' behavior. This would mean that there is a missing path, say path 14, in figure 7.4.1, from other students' behavior directly to the student's achievement.

The upper part of table 7.2.3 shows the effects of school policies (as measured by "disciplinary climate" differences) on various aspects of student behavior, as indicated by path 9. The lower part shows the effects of those policies on a student's achievement through the student behavior in the school--that is, through both the student's own behavior and that of other students, paths 10 and 12.[1]

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[1] The effects of school policies on a student's achievement through his own and other students' behavior (that is, through paths 10-13 and 9-14) cannot be distinguished here. If the methods used had allowed distinguishing the effects on achievement of the students' own behavior and that of the other students (path 13 and missing path 14), then the effect of school policies through other students' behavior and own behavior would simply be in

The analysis as carried out in this chapter does not, of course, allow for distinguishing the sizes of the effects through all the paths shown in figure 7.4.1. It only begins to allow distinguishing qualitatively between the kinds of effects identified by the various paths shown in figure 7.4.1. Most important for purposes of policies vis-a-vis private schools, of course, is the relative importance of the direct effects of school type on school policy (path 5) and the indirect effects which begin with path 4, the effect of school type upon other students' backgrounds. Policies that would affect the social composition of the students attending schools in the private sector would change path 4, but would not change path 5.

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proportion to the sizes of paths 14 and 13. This must be so, since the effect of school policies, a variable that is constant for all students in the school, on a given student's behavior and on the average behavior of all students cannot even in principle be distinguished.

CHAPTER 8

CONCLUSION

In chapter 1 of this report, we examined a number of premises underlying policies that would increase the role of private schools and a number of underlying policies that would decrease their role. Perhaps the best way to conclude is to review those premises, to see just which premises this report has provided evidence on, and what can be concluded from the evidence about each premise. In addition, other results were found along the way, some of which provide additional information that bears upon the overall policy questions.

Premise underlying policies that would increase the role of private schools

1. Private schools produce better cognitive outcomes than do public schools (chapter 6).

The evidence from chapter 6, supplemented by evidence from chapter 7, is that private schools do produce better cognitive outcomes than public schools. When family background factors that predict achievement are controlled, students in both Catholic and other private schools are shown to achieve at a higher level than students in public schools. The difference at the sophomore level, which was greater for Catholic schools than for other private schools, ranged from about a fifth of the sophomore-senior gain to about two-thirds the size of that gain (i.e., from a little less than half a year's difference to something more than one year's difference). This evidence is subject to a caveat: despite extensive statistical controls on parental background, there may very well be other unmeasured factors in the self-selection into the private sector that are associated with higher achievement.

We examined gains from the sophomore to the senior year in the three sectors; we introduced three differing sets of assumptions for examining this growth, to get a range of estimates. Two sets of assumptions probably favor the public sector and one probably favors the private sectors. Under all sets of assumptions, achievement growth was greater in both private sectors than in the public sector except for reading in the Catholic schools, which gave different results under different assumptions.

A caveat to all these results is shown by the high-performance public and private schools. Performance was much higher in both of these sets of schools than in any of the three sectors (section 6.1), although these schools could not be separately studied in the extended analysis of section 6.2 because of ceiling effects in achievement scores.

2. Private schools provide better character and personality development than do public schools (chapter 5).

Little evidence on character and personality development was provided in this report. Students in other private schools show slightly higher levels of self-esteem as sophomores and higher gains from the sophomore to senior year in fate control than students in public or Catholic schools. The inference that there is greater growth on both these dimensions in other private schools is strengthened by the fact that students in high-performance private schools showed even higher levels as sophomores, and similarly high sophomore-senior gains, while students in high-performance public schools did not, despite the fact that the parental backgrounds of students in the latter schools are higher than those in other private schools. The fact that the other private and high-performance private schools have less than half the student-teacher ratio than schools in the other sectors suggests that the difference might be due to this. Two points should be recalled, however, in assessing this evidence: first, the other private sector is especially diverse; and second, our sample of schools in that sector is especially weak. Thus the conclusions on this point must be regarded as merely an indication that further examination is warranted.

3. Private schools provide a safer, more disciplined, and more ordered environment than do public schools (chapter 5).

The evidence is strong that this premise is true. The greatest difference found in any aspect of school functioning between public and private schools was in the degree of discipline and order in the schools (sections 5.3 and 5.4). The Catholic and other private schools appear somewhat different in their discipline and behavior profiles, with students in other private schools reporting more absences and class-cutting but also more homework, fewer fights among students, and greater teacher interest in students. However, in all these respects, both sectors showed greater discipline and order than the public schools.

4. Private schools are more successful in creating an interest in learning than are public schools (chapter 5).

There is little evidence to confirm or disconfirm this premise in the report. The sectors differ only slightly in student responses to the two direct questions concerning interest in school, and there is not much to be inferred from indirect evidence presented in the report.

5. Private schools encourage interest in higher education and lead more of their students to attend college than do public schools with comparable students (chapter 6).

The evidence on this premise is toward a positive answer, but it is not fully consistent. There is evidence that students have higher college aspirations and expectations in private schools than do students from comparable backgrounds in public schools, but it is not clear to what extent the private schools function to generate these overall higher aspirations and expectations. The evidence does indicate that Catholic schools function to decrease the differences between students from different social backgrounds.

6. Private schools are smaller and thus bring about greater degrees of participation in sports and other activities than do public schools (chapter 5).

The evidence shows that this premise may be true for other private schools (though again a caution is necessary about generalization from the weak sample of other private schools). The premise is not true for Catholic schools compared to public schools. The fact that Catholic schools are smaller in size than public schools does not result in increased participation in extracurricular activities.

7. Private schools have smaller class size, and thus allow teachers and students to have greater contact (chapter 4).

The other private schools have sharply lower student-teacher ratios than the public schools, while the Catholic schools have slightly higher ratios. There are fewer than half the students per teacher in other private schools than in public or Catholic schools (table 4.2.1). No direct evidence on contact between students and teachers is presented.

8. Private schools are more efficient than public schools, accomplishing their task at a lower cost.

The report contains no evidence on this premise.

Premises underlying policies that would decrease the role of private schools

1. Private schools are socially divisive along income lines, creaming the students from higher income backgrounds, and segregating them into elite schools (chapter 3).

The evidence on this premise works in two directions. First, among the three major sectors, the other private schools contain students from somewhat higher income backgrounds and the Catholic schools contain students from slightly higher income backgrounds than the public schools. The differences are primarily at the highest and lowest income levels, with all three sectors having a majority of students in a broad middle-income category ranging from $12,000 to $38,000 a year, and similar proportions at different levels within this range. Second, the internal segregation by income within each sector goes in the opposite direction with the public sector showing slightly higher income segregation than either the Catholic or other private sectors. However, income segregation is not high within any sector. The end result of these two forces acting in opposite directions is that U.S. schools as a whole show slightly greater segregation by income than would be the case if private school students of differing income levels were absorbed into the public schools in the same way that public school students of differing income levels are currently distributed among schools.

2. Private schools are divisive along religious lines, segregating different religious groups into different schools (chapter 3).

The evidence is strong that this is true. Besides the 30 percent of private schools that are Catholic, enrolling 66 percent of all private school students, 25 percent of private schools, enrolling 12 percent of private school students, are affiliated with other religious denominations. Examining religious segregation solely in the Catholic/non-Catholic dimension, the report shows that the great majority of Catholics are in public schools, but that over 90 percent of the students in Catholic schools are Catholic. Within each sector, the Catholic/non-Catholic segregation is least in the Catholic schools themselves, greatest in the other private schools. The overall impact of the between-sector segregation and the differing segregation within sectors is, as might be expected, that schools in the United States are more segregated along Catholic/non-Catholic lines than they would be if private school students were absorbed into the public schools.

3. Private schools are divisive along racial lines, in two ways: they contain few blacks or other minorities, and thus segregate whites in private schools from blacks in public schools; and the private sector itself is more racially segregated than the public sector (chapter 3).

The evidence shows that the first of these premises is true with respect to blacks but not with respect to Hispanics and that the second is not true with respect to blacks or Hispanics. The end result with respect to Hispanics is that the segregation of U.S. schools is a little different from what it would be if there were no private schools.

Catholic schools enroll less than half as high a proportion of blacks as the public schools, and other private schools only about a quarter as high a proportion. Internally, however, the blacks and whites in the private sectors are considerably less segregated from one another than they are in the public sector. The end result of these two opposing forces, between-sector and within-sector, is that the segregation of black and white students in the U.S. schools is no greater and no less than it would be if there were no private schools, and their students were absorbed into the public sector, distributed among schools as public sector black and white students are now distributed.

4. Private schools do not provide the educational range that public schools do, particularly in vocational and other nontraditional courses or programs (chapter 4).

The evidence on this premise is that it is correct. Schools in both the Catholic and other private sectors provide primarily academic programs and have few vocational or technical courses. Even in academic areas, however, some of the smaller schools in the other private sector have a limited range of subjects, as exemplified by the fact that 44 percent of students in the other private sector are in schools with no third year foreign language courses. The lesser educational range of the private sector is also shown by the more comprehensive character of the high-performance public schools compared to the high-performance private schools.

5. Private schools have a narrower range of extracurricular activities, and thus deprive their students of participation in school activities outside the classroom (chapter 5).

This premise is almost the direct opposite of premise 6 on the other side, so the answer is the same as was given there. Students in Catholic and public schools show about the same amount of participation in extracurricular activities, while students in other private schools show more. Thus this premise is not correct.

6. Private schools are unhealthily competitive, thus public schools provide a healthier affective development (chapter 5).

The report provides no direct evidence on this premise, but the indirect evidence suggests that something like the reverse is true for the comparison between the other private and public schools. (See premise number 2 in the preceding section.)

7. Facilitating the use of private schools would aid whites more than blacks and those better off financially at the expense of those worse off; as a result, it would increase racial and economic segregation (chapter 3).

It is not possible with this data to directly answer this question. The results of the analysis carried out in chapter 3 indicate that family income exercises an important independent influence on the probability that a given student will receive a private education particularly in a Catholic school. The effect of income on probability of enrollment in Catholic schools is positive and significantly stronger for blacks than for whites since blacks have a substantially lower average income than whites. Thus, the evidence indicates that the current underenrollment of blacks in private secondary schools is, to a significant extent, attributable to their lower income.

Insofar as the effect of family income reflects a price effect, these findings suggest that policies designed to reduce the cost of private education to families would result in a reduction of the economic and racial segregation that is currently found between sectors. This is because lower-income students and blacks would be expected to shift into Catholic schools at rates that are equal to or greater than higher-income and white students. Further research, using data that are more adequate to the problem at hand, may find that such an extrapolation is not valid. The available evidence strongly suggests, however, that a significant interest in the alternative that private schools represent is present among minorities and lower-income families.

Additional results relevant to the policy question of facilitating or constraining use of public schools:

1. Catholic schools more nearly approximate the "common school" ideal of American education than do public schools, in that the achievement levels of students from different parental educational backgrounds, of black and white students, and of Hispanic and non-Hispanic white students are more nearly alike in Catholic schools than in public schools or other private schools. In addition, the educational aspirations of students from these different backgrounds are more alike in Catholic than in public or other private schools.

2. Important factors in bringing about higher scholastic achievement in private schools than in public schools are the greater academic demands and more ordered environment in the private schools. The evidence shows not only that the sectors differ greatly on these dimensions, but also that within the public schools, students who are better disciplined and are in schools with more ordered environments achieve more highly. These results provide information that is relevant not only to private-school policies, but also to the functioning of all schools, public or private.

It may or may not be useful to attempt to sum up the overall implications for the premises underlying policy arguments to facilitate or constrain the use of private schools. Some of the premises on each side are confirmed, some on each side are disconfirmed. It is hard, however, to avoid the overall conclusion that the factual premises underlying policies that would facilitate use of private schools are much better supported on the whole than those underlying policies that would constrain their use. Or, to put it another way, the constraints imposed on schools in the public sector (and there is no evidence that those constraints are financial, compared with the private sector) seem to impair their functioning as educational institutions, without providing the more egalitarian outcomes that are one of the goals of public schooling.

APPENDIX A

STATISTICAL REFERENCES

A.1 Calculation of Standard Errors of Estimates

Neither standard errors nor confidence intervals are reported in the tabulations and analyses of this report. Instead, this section presents information that allows calculation of approximate standard errors for most percentages based on student data.

The general equation for calculating the approximate standard error of a percentage is:

$$s.e.(p) = A \sqrt{p(100-p)/n}$$

where p is the percentage for which the standard error is to be calculated; s.e.(p) is the approximate standard error of p; A is a correction factor, which increases with the departure of the sample form a simple random sample through clustering or other aspects of the sample design; and n is the unweighted number of students in the particular class over which the percentage is calculated. (For example, table 3.1.1 estimates that 5.8 percent of sophomores in Catholic schools are black. The unweighted number of sophomores in Catholic schools, which is 2,831--see table A.1.1 below--is the correct value of n for calculating the standard error of this percentage.[1])

The values of A and n for classes on which most of the percentages in this report are based are given in table A.1.1. When percentages are based on different classifications or on subclassifications within each of these classifications, it is appropriate to use the subclass

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[1] This does not take into account sample size reduction by nonresponse. Throughout the report, nonresponses are excluded from the base on which the percentage is calculated. An approximate reduction of n for nonresponse can be determined from the marginals provided in "High School and Beyond Information for Users, Base Year (1980) Data," available from NCES.

TABLE A.1.1

CORRECTION FACTORS AND SAMPLE SIZES FOR CLASSES ON WHICH MOST PERCENTAGES FROM STUDENT DATA IN REPORT ARE BASED

	U.S. Total	Public	Private			High Performance Schools	
			Total[a]	Catholic	Other Private	Public[b]	Private[c]
Sophomores							
A (correction factor) ...	1.614	1.529	2.160	1.942	2.597	1.614	2.597
n (sample size)	30,263	26,448	3,462	2,831	631	370	353
Seniors							
A (correction factor) ...	1.620	1.509	2.255	2.038	2.689	1.620	2.689
n (sample size)	28,465.	24,891	3,248	2,697	551	311	326

[a] The correction factor A for total private is calculated as an average of the Catholic and other private correction factors, weighting the Catholic correction factor by 2 and the other private by 1.

[b] The high performance public correction factor is taken to be the same as that for the public sector as a whole.

[c] The high performance private correction factor is taken to be the same as that for the other private sector.

TABLE A.1.2

APPROXIMATE STANDARD ERRORS FOR PERCENTAGES BASED ON PRINCIPAL CLASSIFICATIONS USED IN REPORT

	U.S. Total	Public	Private			High Performance Schools	
			Total	Catholic	Other Private	Public	Private
Sophomores							
p = 50 percent	0.46	0.47	1.84	1.82	5.17	4.20	6.91
p = 90 percent or 10 percent	0.28	0.28	1.10	1.09	3.10	2.52	4.15
Seniors							
p = 50 percent	0.48	0.48	1.98	1.96	5.73	4.59	7.45
p = 90 percent or 10 percent	0.29	0.29	1.19	1.18	3.44	2.76	4.47

TABLE A.1.3

NUMBERS OF STUDENTS AND SCHOOLS IN SAMPLE, FOR MAJOR SUBCLASSES USED IN REPORT

Case Unit	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Private	Public	Private
Total students	58,728 (58,049)[a]	51,339	5,528	1,182	682	679
Sophomores	30,263 (29,910)[a]	26,448	2,831	631	370	353
Seniors	28,465 (28,139)[a]	24,891	2,697	551	311	326
Number of schools	1,015 (1,004)[a]	894	84	27	12	11

[a] Excluding high-performance private schools.

TABLE A.1.4

WEIGHTED NUMBERS OF STUDENTS AND SCHOOLS IN SAMPLE, FOR MAJOR SUBCLASSES USED IN REPORT

Case Unit	U.S. Total	Major Sectors			High-Performance Schools	
		Public	Catholic	Private	Public	Private
Total students	6,852,441 (6,850,525)[a]	6,195,294	429,217	226,014	88,788	1,916
Sophomores	3,787,782 (3,786,775)[a]	3,436,168	228,417	122,190	44,889	1,007
Seniors	3,064,659 (3,063,750)[a]	2,759,126	200,900	103,824	43,899	909
Number of schools	20,316 (20,303)[a]	15,766	1,571	2,966	128	13

[a] Excluding high-performance private schools.

size together with the largest correction factor of those shown in the table that could apply to the subclass.

The equation for calculating standard errors, together with the data shown in table A.1.1, were used to calculate approximate standard errors for percentages of 50 percent, 10 percent, and 90 percent (the latter two of which have the same standard error). These are given in table A.1.2.

It should be emphasized that these standard errors are approximations intended merely to provide guidance as to the confidence interval around a percentage estimate, or the chance that a difference between two percentages could be due to sampling error.

For estimation of approximate standard errors for data from the school questionnaires, a conservative estimate can be obtained by assuming A to be the same as for student data, and taking n from the number of schools shown for the relevant class in table A.1.3; a non-conservative estimate can be obtained by assuming $A=1$ for all classes of schools.

A.1.2 Calculation of Standard Errors for Complex Statistics

Previous research suggests that it is unnecessary to adjust the estimates of standard errors of complex statistics, such as regression coefficients, for the effects of a stratified clustered sampling design. Kish and Frankel (1974) found that in the case of complex statistics, the design effect reduces to one.

In our analysis of school outcomes and factors affecting achievement outcomes (chapters 6 and 7), we estimated standard errors under the general assumption of statistical independence of elements used in general statistical methods. However, it did seem important to test, at least in some limited way, the applicability of Kish and Frankel's previous work on design effects for complex statistics to the instance of an estimated Y.

Given the excessive cost associated with empirical estimates, the calculations were limited to the private sector standardization carried out for table 6.2.1 following the balanced repeated replication method developed at the U.S. Census Bureau. In general, the sample variance is empircally calculated by taking differences in half-sample estimates of the sample statistic, in this case, Y. Y is of course a function of the regression coefficients associated with each half-sample and the means used to standardize the estimates of achievement.

A second order estimator was calculated as follows:

$$\text{VAR}\ (g(S)) = \frac{1-f}{4k} \sum_{i=1}^{k} [g(H_i) - g(C_i)]^2$$

where S denotes the entire sample; k, the number of half-sample pairs; H_i, the i^{th} half-sample formed by including on of the two primary selection groups from each of the strata; C_i, the complement half-sample; and f some increment adjustment (not used in the estimate).

Twelve pairs of half-samples were drawn, following an orthogonal design matrix outlined by Plackett and Burman (1946). Within each of the eight private sector stratum, schools were randomly assigned to one of two groups. For those schools classified as self-representing, students within the school were randomly assigned to one of these two groups. Then, following the design matrix, schools were placed in one of the half-samples for each of the twelve pairs.

TABLE A.1.5.

ESTIMATED AND EMPIRICAL STANDARD ERRORS FOR STANDARDIZED ACHIEVEMENT INCREMENTS IN CATHOLIC AND OTHER PRIVATE SCHOOLS[a]

Subtest	Catholic		Other Private	
	10	12	10	12
Reading:				
Estimated	.0469	.0517	.0632	.0692
Empirical	.0489	.1095	.1354	.2218
Ratio	1.043	2.118	2.142	3.2052
Vocabulary:				
Estimated	.0439	.0456	.0591	.0614
Empirical	.0909	.0632	.1735	.2088
Ratio	2.071	1.386	2.936	3.401
Mathematics:				
Estimated	.0883	.0965	.1191	.1293
Empirical	.1063	.1122	.3936	.2905
Ratio	1.204	1.163	3.305	2.247

---

[a] Estimates assume a design effect of one (1) for public sector. If design effect in public sector were assumed to be equal to empirical estimates for Catholic sector, then some of the empirical estimates shown above would change by 1/1000.

Table A.1.5 shows the results of this analysis along with the standard errors originally estimated for table 6.2.1 and the ratio of the empirical and estimated standard errors. The ratio of the standard errors is the design effect for the estimated Y. The results show that for the Catholic sector the design effect approximates one in four out of six of the estimates. However, for the other private sector, the design effect is substantially larger; it is approximately three in four out of six of the estimates. For the other private sector then, the estimates are substantially larger than those associated with complex statistics. This provides further evidence regarding the caution one should use in making inferences from the other private sector sample.

A.2 Calculation of Measures of the Distribution of Students within Sectors

The measures employed in chapter 3 for describing variations in student mix among schools within a sector are described below. The measure of interracial contact within a sector is constructed as follows. If we number the schools in the sector 1, ...k, ...n, and consider the first school, there is a given proportion of whites in that school. Call this p_{1w}. There is also a certain number of blacks in the school. Call this n_{1b}. Then, for this number of blacks, the proportion of whites in their school is p_{1w}. If we weight this proportion by the number of blacks, and average over all schools, we obtain the desired measure, which we will call s_{bw}, the proportion of white children in the school of the average black child.

$$s_{bw} = \frac{\sum_{k=1}^{n} n_{kb} p_{kw}}{\sum_{k=1}^{n} n_{kb}} \qquad (1)$$

or for groups i and j

$$s_{ij} = \frac{\sum_{k=1}^{n} n_{ki} p_{kj}}{\sum_{k=1}^{n} n_{ki}} \qquad (2)$$

This measure is affected not only by the degree of segregation between two groups among schools in the sector, but also by the overall proportion of students in each group. If there are few black children in a sector, for example, then whether or not there is the same proportion of blacks in each school, the average white student will have a small proportion of black children in the same school. Because of this, it is valuable to have a measure of just how far from an even distribution across the schools the actual distribution is, that is, a measure that is standardized for the number of whites and blacks in the school type. Such a measure can be constructed, with a value of 0 if there is no segregation between the two groups in question and a value of 1.0 if segregation is complete.

The standardized measure is constructed as follows. Let the proportion of children from group j in the sector be p_j. If the same proportion of children from group j were in each school, then s_{ij} would be equal to p_j. If the children of group j were all in schools by themselves, totally isolated from children of group i, s_{ij} would be 0. Thus a measure of how far s_{ij} is from p_j is $(p_j - s_{ij})/p_j$. This we will call r_{ij}, which may be thought of as a measure of segregation. The formula is:

$$r_{ij} = \frac{p_j - s_{ij}}{p_j} \qquad (3)$$

It is important that, although the standardized measure is a measure of the segregation of children in one group from those in another, it is the unstandardized measure that measures directly the presence of children from one group in schools attended by children of another group. Thus the proportion of black schoolmates for the average white child may be low, without the measure of segregation being especially high.

In order to compute these measures from the High School and Beyond data, sophomores and seniors are combined to give a more precise estimate. Students are assigned their design weights (which may differ for sophomores and seniors), and the proportion of each relevant group in the school is estimated from the weighted numbers in each group. For estimating equation (2), n_{ki}, the number of students from group i in school k, is the number weighted by the design weight.

A.2.1 Alternative Measures of Racial and Ethnic Segregation

Social scientists have used a number of different methods for assessing the extent to which members of different social groups are segregated from each other. The discussion that follows will briefly describe the methods and present the results of three commonly employed alternative measures of racial and ethnic segregation between schools within a unit of interest, and compare these results with those obtained by the measure r_{ij}.

1. Dissimilarity Index

The first alternative measure examined is the dissimilarity index, or "index of replacement." The formula employed here is

$$D = \frac{1}{2} \sum_{i=1}^{k} \left| \frac{N_i}{N} - \frac{W_i}{W} \right|$$

where N_i is the number of black or Hispanic students in school i and N is the total number of blacks or Hispanics in the sector; and W_i is the number of whites in school i and W is the total number of whites in the sector (Cortese, Falk, and Cohen 1976). The usual interpretation of the dissimilarity index is that it represents the proportion of the minority population in the sector that would have to be shifted from the schools in which they are currently enrolled in order to achieve an even distribution of minorities across the schools of the sector. Carrying out the calculations for each of the three sectors and for the private sector as a whole, the measures of dissimilarity (D_{black} and $D_{Hispanic}$) are obtained:

	D_{Black}	Ex_b	$D_{Hispanic}$	Ex_H
1. Public sector	.681	.093	.482	.034
2. Private sector	.600	.028	.584	.036
a. Catholic	.569	.032	.511	.036
b. Other private	.692	.021	.726	.032

The results generally indicate a greater extent of segregation than the measures r_{ij} used in table 3.1.4. The relative ordering of the sectors with respect to segregation also changes. For the segregation of blacks and whites, the public sector is more segregated than the private (.681 vs .600) and this is consistent with the r_{ij} results. But whereas the value of r_{ij} is lowest for the other private sector, the value of dissimilarity index for this sector is the highest (.691). For the segregation of Hispanics and whites, the results also contrast somewhat with the values of r_{ij}. While the dissimilarity index also shows the public sector to be less segregated than the private (.482 vs .584), the Catholic sector is now seen as more segregated (.511) than the public. For both of the index of dissimilarity and r_{ij}, though, the substantially higher value of Hispanic-white segregation in the private sector overall is largely a reflection of the contribution of the other private sector, where segregation is quite high.

A number of criticisms have been directed at the index of dissimilarity. Cortese, Falk, and Cohen (1976) argue that the concept of replacement is not a very useful tool for either analytic or policy purposes, since it does not allow for the replacement of the individuals who would have to be moved to achieve evenness. A measure suggested by these authors as more meaningful is an index of exchange, which gives the proportion of blacks or Hispanics that must exchange laces with non-blacks or non-Hispanics to achieve evenness. These qualities are derived by simply multiplying the above calculated indices of dissimilarity by the proportion of the sector that is of the group in question (blacks or Hispanics in this case). The measures of exchange, Ex_b and Ex_H, are listed alongside the measures of dissimilarity in the above table. These measures correspond much more closely to the r_{ij} measures used in the body of the report, showing in the case of black-white segregation a greater public-private disparity than shown by r_{ij}.

While the dissimilarity index and its derivatives have a certain attractiveness in respect to the relative ease of their calculation and interpretation, it is questionable whether these sorts of measures are applicable to either the sort of question we are posing here (i.e. the extent of within-sector segregation) or the data we have available. To be sure, we are asking about how students of different groups are distributed among schools within the different sectors, and the dissimilarity index represents an aggregation of differences between distributions at the school level and the sector distribution. It is the case, however, that many schools within the public and private sectors are not located in areas where minorities reside in substantial numbers, if at all. Thus the estimates for the proportions that must be replaced or exchanged to achieve a balance are of questionable value. Dissimilarity measures are probably most useful for local level comparisons, which is in fact the way they are most commonly used. We have made an effort to obtain a locally-based measure of segregation, the results of which are found in table 3.5.1. The figures reported in the table are obtained by comparing the proportional minority enrollment of schools to the proportion of minority school-age residents in the local areas that the schools are located in.

Aside from the substantive problems with the dissimilarity index, the data at our disposal are not well suited technically to such calculations. For as Cortese et al (1976) demonstrate, the values of a dissimilarity index will depend (inversely) on both the number of minority students within schools and the overall proportion minority in the sector. In effect, then, the index combines between and within components of segregation (See Schwartz and Winship 1979 for a discussion of the general problem). As there are sharp differences between the public and private sectors on both of these counts, it seems that little confidence should be placed in results of dissimilarity analyses with data such as those we employ.

2. Gini Index

A second measure that can be used for assessing the extent of within-sector segregation is the Gini index. As Duncan and Duncan (1955) point out, the Gini index can be readily illustrated in relation to the "segregation curve." This curve is given by plotting the cumulative proportion of whites on the cumulative proportion of blacks or Hispanics across all schools in a sector, where the schools are first arrayed in descending order of the proportion of their students who are black or Hispanic. The computational formula for the Gini index is

$$G_i = \sum_{i=1}^{k} x_{i-1} - y_i - \sum_{i=1}^{k} x_i y_{i-1}$$

where x_i is the cumulative proportion of blacks or Hispanics through the ith school and y_i is the cumulative proportion of whites through the ith school, with the schools ranked in descending order of the proportion of their students who are black or Hispanic. The Gini index is equal to the area between the curve and the main diagonal. Segregation curves for blacks and Hispanics in each sector are given in figures A-1 to A-8.

	Gi_{Black}	Gi_{Hispanic}
Public	.865	.694
Private	.800	.787
Catholic	.775	.704
Other Private	.838	.911

Figure A-1
Segregation Curve for Blacks and Whites in Public Schools

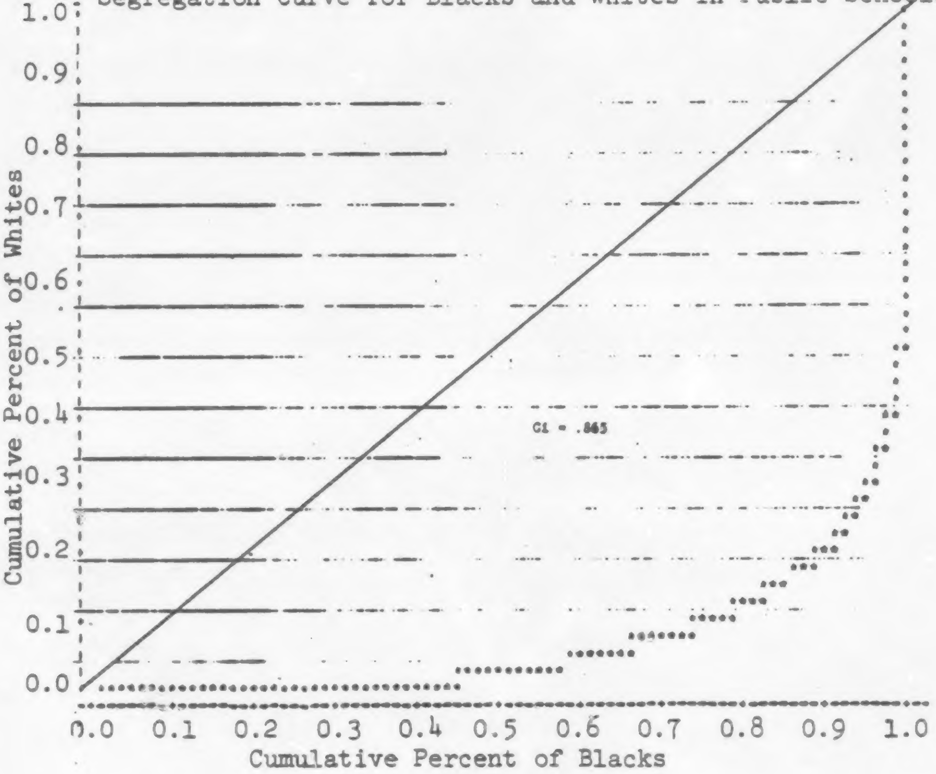

Figure A-2
Segregation Curve for Blacks and Whites in All Private Schools

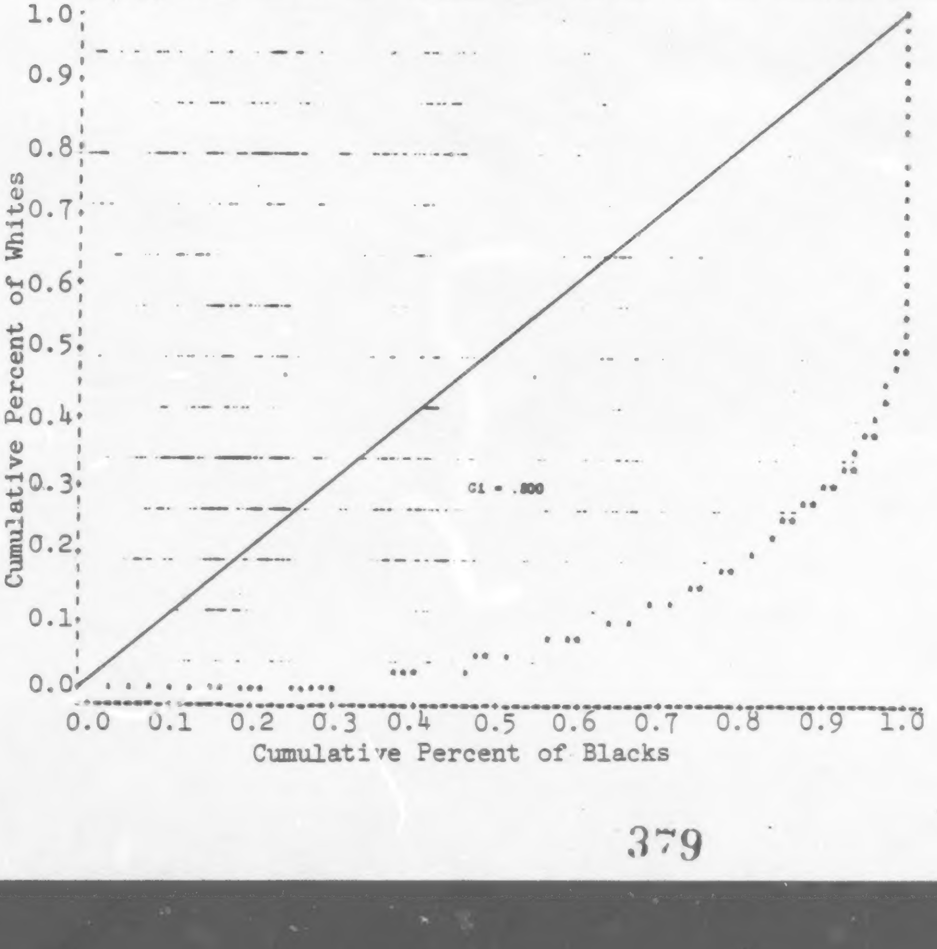

Figure A-3
Segregation Curve for Blacks and Whites in Catholic Schools

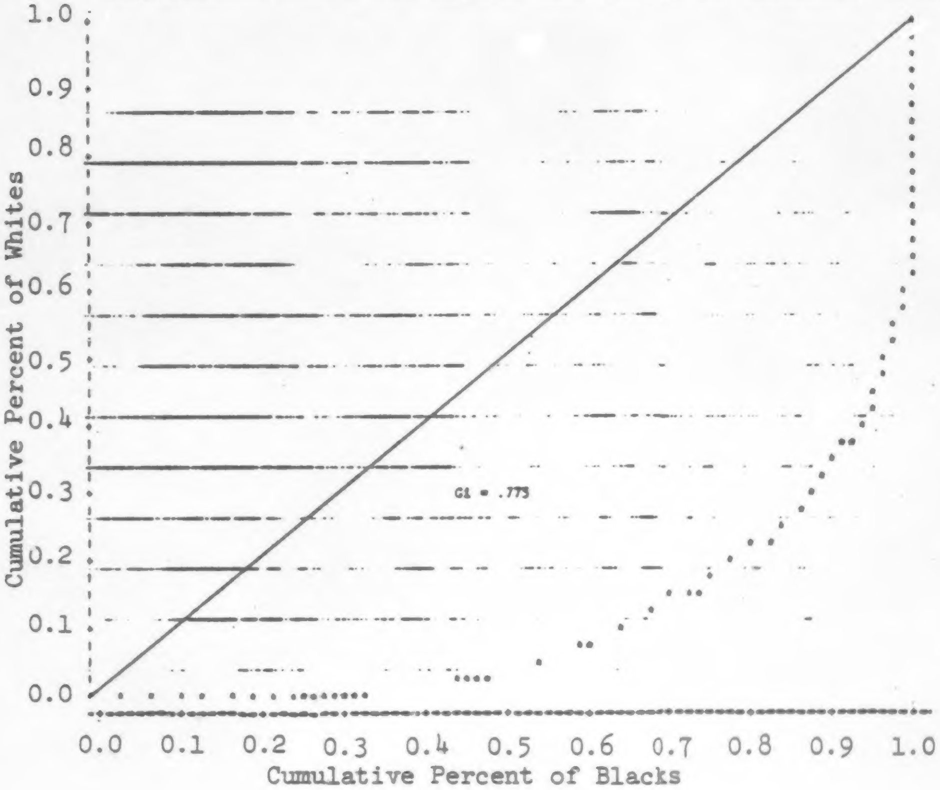

Figure A-4
Segregation Curves for Blacks and Whites in Other Private Schools

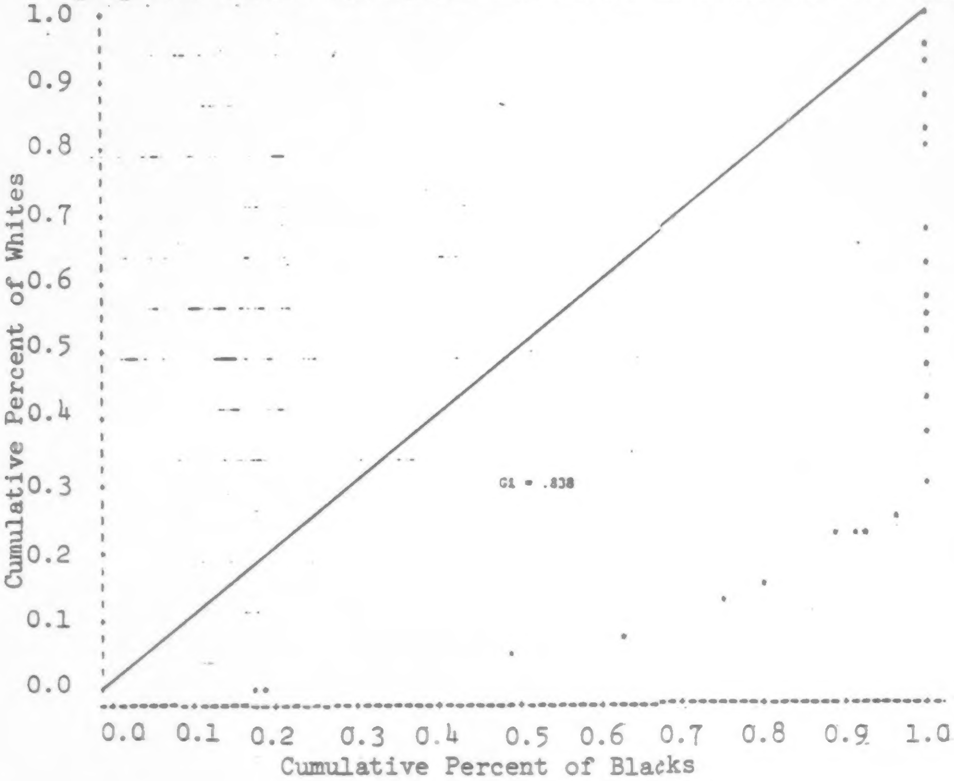

Figure A-5

Segregation Curve for Hispanics and Whites in Public Schools

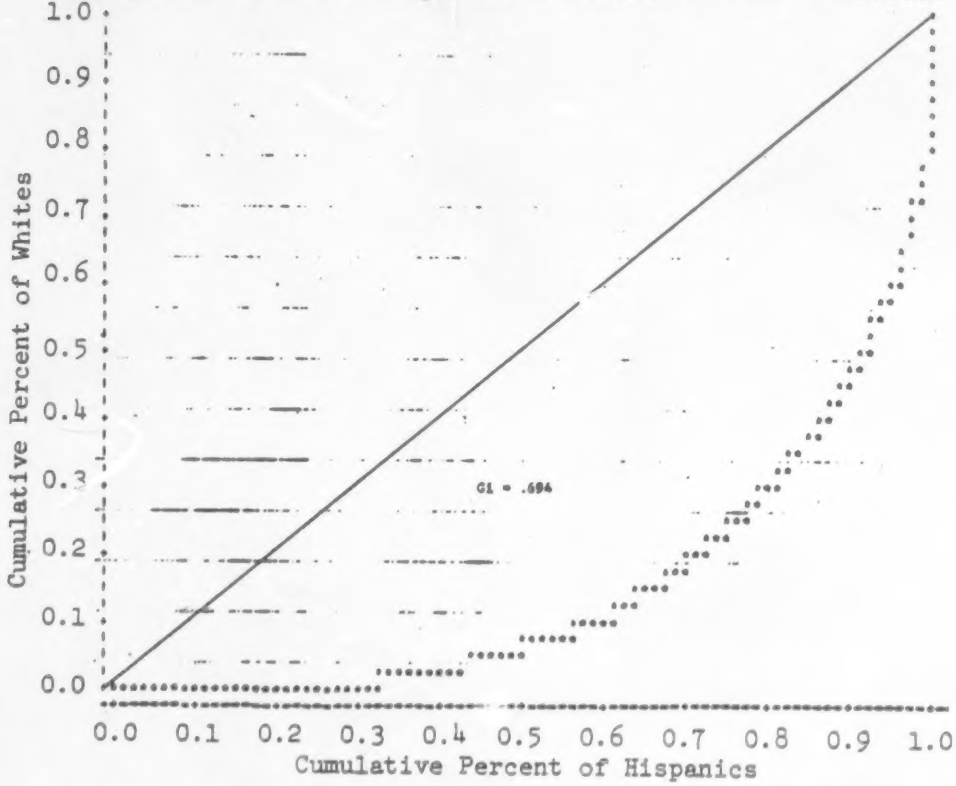

Figure A-6

Segregation Curve for Hispanics and Whites in All Private Schools

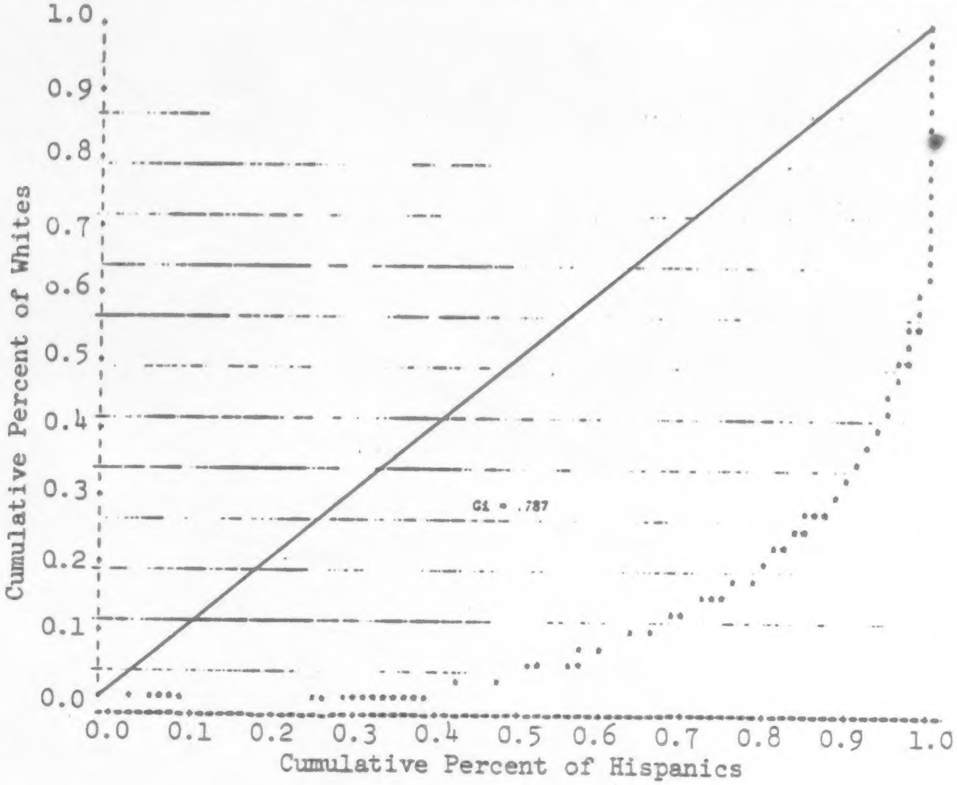

Figure A-7
Segregation Curve for Hispanics and Whites in Catholic Schools

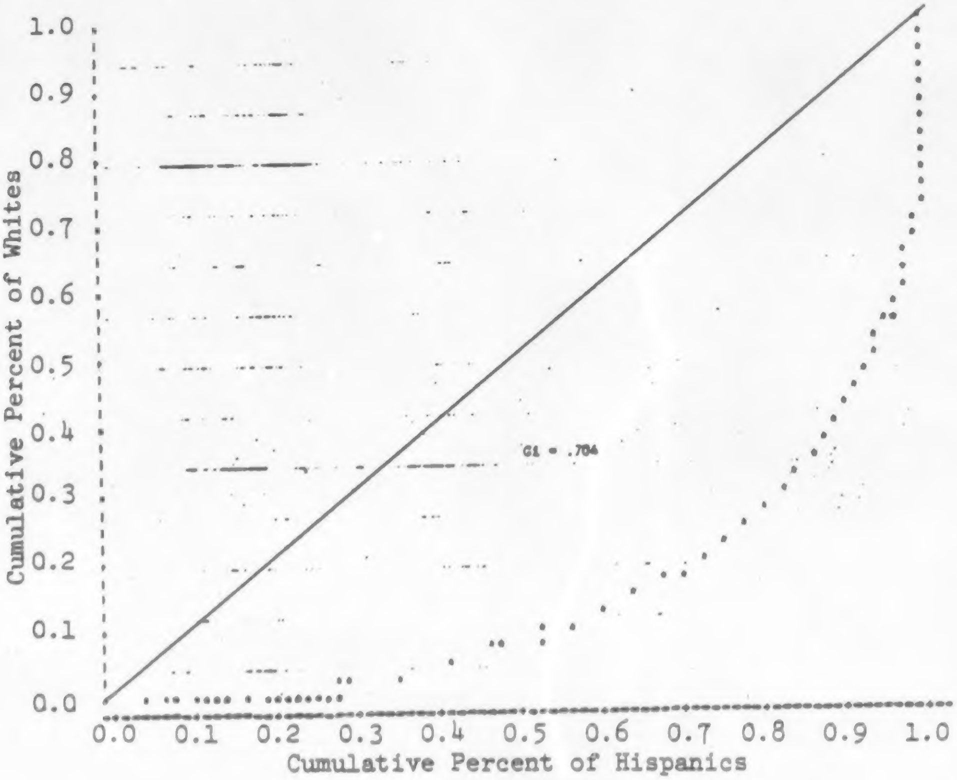

Figure A-8
Segregation Curve for Hispanics and Whites in Other Private Schools

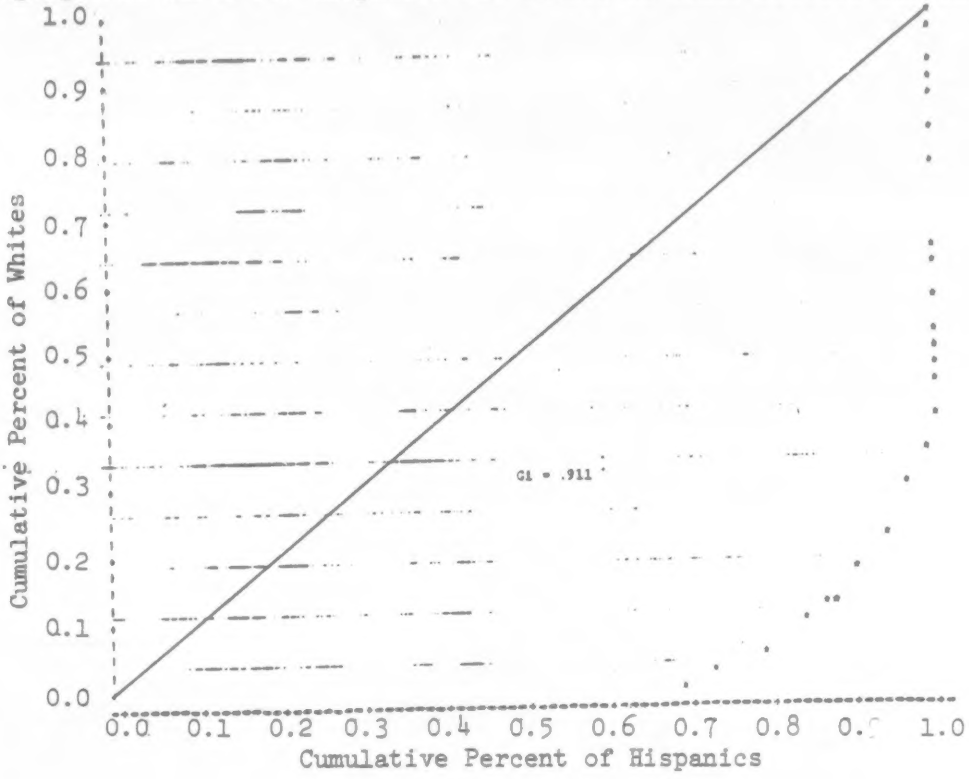

TABLE A.2.1

Racial and ethnic entropies and indices of segregation for public and private schools

Measure	Total U.S.	Public	Private Total	Private Catholic	Private Other Private
A. Sector Entropies					
1. E_{bw}, the racial entropy of the sector	.678	.702	.398	.441	.306
2. E_{hw}, the ethnic entropy of the sector	.570	.583	.437	.479	.348
B. Average School Entropies					
1. $\overline{E}_{bw}$, the average racial entropy	.376	.389	.261	.298	.190
2. $\overline{E}_{hw}$, the average ethnic entropy	.368	.377	.289	.344	.185
C. Segregation Indices					
1. H_{bw}, segregation of blacks and whites (ranges from 1=complete segregation to 0=no segregation)	.445	.446	.345	.324	.378
2. H_{hw}, segregation of Hispanics and whites (ranges from 1=complete segregation to 0=no segregation)	.354	.353	.337	.281	.468

[a] The entropies and segregation measures are calculated by the following formulas:

$$E_{ij} = p_i \log 2 \frac{1}{p_i} + p_j \log 2 \frac{1}{p_j}$$

where p_i = the proportion of a sector's student membership that is of group i, and p_j = the proportion of that sector's membership which is group j.

$$\overline{E}_{ij} = \sum (N_i + N_j) p_i \log 2 \frac{1}{p_i} + p_j \log 2 \frac{1}{p_j}) / \sum (N_i + N_j)$$

where N_i = the number of group i students in school x, N_j = the number of group j students in school x, p_i = the proportion of group i students in schools x, and p_j = the proportion of group j students in school x's membership.

$$H_{ij} = (E_{ij} - \overline{E}_{ij})/E_{ij}$$

See Theil and Finizza (1967 and 1970), and Zoloth (1976) for discussion of the method and additional applications.

The ordering of sectors with respect to the segregation of blacks and whites is essentially the same as that found in table 3.1.2, where the public sector is more segregated internally than the private sector as a whole, and the Catholic and other private sectors taken separately. The results for ethnic segregation, however, diverge somewhat from what is obtained in table 3.1.2. By the Gini index, the Catholic sector is slightly more segregated internally than is the public sector, whereas the measure r_{ij} indicates a reverse ordering. By both measures the other private sector overall is found to be the most segregated.

3. Information Theoretic Index

The third alternative measure of segregation that we employed is one derived from the information theoretic framework by Theil. This measure overcomes the limitations of dissimilarity indices and has attractive mathematical properties (see Zoloth 1976 and Fienberg 1981). The computational formulas and results are shown in table A.2.1. Theil and Finizza (1967) consider the entropy measures to be indices of "integration"; from these a measure of segregation can be calculated. The closer that the racial or ethnic composition of a given unit, such as a sector or a school, approaches an even balance, the closer the entropy of the unit is to its upper limit of 1. The lower limit is 0, corresponding to the situation where only one group is represented in the unit. The general strategy is calculation of the entropy for a sector as a whole, then calculation of the average entropy for the schools in that sector and finally, as a measure of segregation, the former minus the latter divided by the latter. The general interpretation of the segregation measure is the degree to which the schools in this sector have less even distributions of whites and blacks than the sector as a whole.

The sector entropies given at the top of table, E_{bw} (for blacks and whites) and E_{hw} (for Hispanics and whites) reflect the patterns of between sector segregation. As a result of higher proportion of blacks enrolled in the public schools, the racial entropy of the public sector (.702) is substantially larger than both that of the Catholic sector (.441) and that of the other private sector (.306). Examining the ethnic entropies of the sectors, E_{hw}, the more even balance between sectors in the proportions of Hispanics enrolled is expressed in less pronounced public-private differences.

The differences between sectors are smaller when the weighted averages of school entropies, $\bar{E}_{ij}$, are compared. The average school entropies for the private sector tend to be closer to the private sector entropies than the average public school entropy is to the public sector entropy. This expresses in a different measure the same phenomenon shown in table 3.1.2 when the measures of contact s_{ij} are compared to the proportions enrolled in the sector to obtain r_{ij}. As a consequence, the information theoretic measures of segregation, H_{ij}, lead to essentially the same conclusions as the measures r_{ij} in table 3.1.2. Overall, it appears that the contribution of the private sector to the total segregation of Hispanics and blacks from white in American secondary education is negligible or in the direction of decreasing that segregation slightly. Evidence for the latter tendency is seen in the segregation of blacks and whites. The private sector as a whole is substantially less segregated internally than the public sector (.345 vs .446). Comparing the total U.S. segregation of blacks and whites (.445) to the public sector value, we again reach the conclusion that if private school students were redistributed back into the public sector in exactly the same way that public school students are presently distributed, the segregation in American secondary education would increase slightly. With respect to the segregation of Hispanics and whites, the tendency goes in the opposite direction. Here the private sector appears to slightly increase the overall segregation that is found.

To summarize the results of the analysis of within-sector segregation, all of the alternative measures examined here corroborate the conclusion that blacks and whites are more segregated in the public than in the private sector. Within the private sector, each of the measures except the r_{ij} show the Catholic sector to be less racially segregated than the other private, and all but the dissimilarity index show the other private sector to be more segregated than the public sector. With respect to the segregation of Hispanics and whites, all four of the indices examined show the priate sector to be more segregated than the public sector. Within the private sector the results are more variable between the different indices: While all indications are that the Catholic schools have less ethnic segregation than the other private schools, and that the other private schools are more segregated than the public sector, the Catholic sector has less segregation than the public by the information theoretic and r_{ij} measures, but not by the dissimilarity index and the Gini coefficient.

The information-theoretic index and the r_{ij} index (which also has been called a variance-based index) are quite similar in the results they give with these data, while the dissimilarity index and the Gini coefficient are similar to one another. Apart from specific technical differences, a major reason for this is that the r_{ij} index and the information-theory index express separately between-sector and within-sector segregation by controlling on the proportion black (or white) in the sector when measuring the within district segregation. For the dissimilarity index and the Gini coefficient, this overall proportion is not controlled, so that these measures incorporate into the measure the unevenness of the overall sector racial distribution.

A.3 Calculation of Measures of the Distribution of Students Relative to the Racial or Ethnic Composition of the Local Area

This section describes the measures employed to compare the racial compositions of schools with those of local areas. Interest in such comparisons derives from concern over the accessibility of private education for students of different minority groups. To follow the line of presentation developed with the measures s_{ij} and r_{ij}, we will conceptualize the problems here in terms of an "average student."

The first measure can be seen as addressing a question about the geographic accessibility of "places" in private education for students of different groups. If the average student within a given sector attends a school that is located in an area that has a lower proportion of, say, blacks, than the average student within another sector, then the conclusion would be that the education provided by schools in the former sector tends to be less geographically accessible to blacks than the education provided by schools in the latter sector. Thus, if the schools in a sector are numbered 1, ...k, ...n, and the first school is considered, this school is located in an area that has some proportion of its population that is black. Call this proportion p_{1b}. There are a certain number of students in this school, n_1, and, for this number of students, the proportion of blacks in the local area of their school is p_{1b}. If this student-weighted proportion is averaged over all schools, we obtain the measure, which will be called U_b, the proportion of blacks in the local area of the school attended by the average student:

$$U_b = \frac{\sum_k n_k p_{kb}}{\sum_k n_k} \qquad (1)$$

or for any population group i:

$$U_i = \frac{\sum_k n_k p_{ki}}{\sum_k n_k} \qquad (2)$$

The proportion obtained for each sector can be compared to those of the other sectors in a straightforward fashion.

A second measure follows directly from the first. If geographic accessibility is taken as given, the question arises, How do the actual enrollments in the different sectors compare to the compositions of the areas where their constituent schools are located? If the schools within a given sector enroll numbers of whites, blacks, and Hispanics that are proportional to the numbers of whites, blacks, and Hispanics living in the areas where the schools are located, then schools of this sector reflect exactly the racial-ethnic composition of the areas where they are located. If, however, the average student in a given sector attends a school that has a lower proportion of, say, blacks or Hispanics, then this means that blacks or Hispanics are not attending schools of this sector despite geographic accessibility. Thus, while the first measure is designed to describe the geographic accessibility of schools in a particular sector to a particular group, the second is designed to describe the degree to which enrollment of that group matches the proportion in the geographic area.

The measure to be constructed is a measure of the difference in proportion of a given group in the school and in the surrounding area, weighted by school enrollment. The measure is constructed as follows:

$$V_i = \frac{\sum_{k} n_k (p_{ki} - q_{ki})}{\sum_{k} n_k} \qquad (3)$$

where n_k is the number of students in school k, p_{ki} is the proportion of the population of the area where school k is located that is of group i, and q_{ki} is the proportion of school k's enrollment that is of group i. Since the sum of the weighted proportions q_{ki} is simply equal to the overall proportion of group i in the sector (see tables 3.1.1 and 3.1.2), equation (3) reduces to

$$V_i = \frac{\sum_{k} n_k p_{ki}}{\sum_{k} n_k} - q_i = U_i - q_i \qquad (4)$$

where q_i is the proportion of the sector's total enrollment that is of group i. The measure V_i for sector X can be expressed by the statement, "The average student in sector X attends a school with a proportion of students in group i that is smaller by V_i than the proportion of youth that are of group i in the area in which the school is located."

Although it was not used in this report, one can estimate the extent to which the student weighted schools in a given sector vary in terms of differences from this overall sector measure, with a deviation score, D_i, analogous to a variance. It is calculated as follows:

$$D_i = \frac{\sum_{k} (n_k \sqrt{(p_{ki} - q_{ki} - V_i)^2}}{\sum_{k} n_k} \qquad (5)$$

A.4 Regression coefficients, standard errors, and explained variance for major analyses of report

For the text tables listed below, appendix reference tables with regression coefficients, standard errors, and explained variance are included in this section. Means and standard deviations for all variables used in chapters 6 and 7, along with the correlation matrices for the major portion of the analyses, are included in appendix section A.5.

Text	Appendix reference
Table 6.2.1	Tables A.4.1, A.4.2 and A.4.3
Table 6.2.2	Tables A.4.3 and A.4.4
Table 6.2.6	Table A.4.5
Table 6.3.1	Table A.4.8
Table 6.3.4	Table A.4.11
Tables 7.2.2 and 7.2.5	Tables A.4.13 and A.4.14

For most of the remaining tables presented in chapters 6 and 7, the correlation matrices in appendix section A.5 may be used to reproduce the results reported.

TABLE A.4.1

SUBTEST REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) FOR MODEL INCLUDING PUBLIC SCHOOL SOPHOMORES

	Reading (8)*		Vocabulary (8)*		Mathematics (18)*	
	b	s.e.	b	s.e.	b	s.e.
Intercept	2.083	.071	2.129	.065	5.628	.136
BB101	-.005	.008	.036	.007	.091	.015
BB042	.060	.007	.072	.006	.090	.013
BB039	.076	.006	.097	.005	.186	.011
Number siblings	-.049	.006	-.062	.005	-.075	.011
BB103	.037	.007	.026	.006	.122	.013
Two parent household	.051	.031	.021	.028	.238	.059
BB037B	.005	.017	-.046	.015	.015	.032
BB037C	-.105	.016	-.042	.015	-.227	.032
BB104C	.082	.010	.070	.010	.063	.021
BB104C	.248	.036	.113	.033	.264	.069
BB104D	-.006	.029	.056	.027	.257	.056
BB104G	.255	.035	.296	.032	.378	.067
BB104I	.332	.031	.291	.029	.690	.060
Father's expectation	.180	.034	.135	.031	.484	.065
Mother's expectation	.483	.034	.386	.031	1.183	.065
Hispanic	-.704	.046	-.544	.042	-1.624	.088
Black	-.912	.037	-.852	.034	-2.226	.071
R^2	.190		.214		.255	

TABLE A.4.2

SUBTEST REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) FOR MODEL INCLUDING PRIVATE SCHOOL SOPHOMORES

	Reading (8)*		Vocabulary (8)*		Mathematics (18)*	
	b	s.e.	b	s.e.	b	s.e.
Intercept	2.612	.217	2.829	.203	7.830	.408
BB101	-.057	.021	.053	.020	.060	.040
BB042	.104	.015	.060	.014	.073	.029
BB039	.050	.014	.107	.013	.140	.027
Number siblings	-.084	.018	-.098	.017	-.120	.034
BB103	.032	.019	-.002	.018	.114	.036
Two parent household	.243	.093	-.091	.087	-.264	.176
BB037B	.012	.045	.023	.042	.069	.085
BB037C	-.210	.045	-.186	.042	-.591	.086
BB047G	.084	.028	.010	.026	.013	.053
BB104C	-.166	.114	-.104	.106	-.564	.214
BB104D	.170	.093	.358	.086	.459	.174
BB104G	.396	.116	.572	.109	.962	.219
BB104I	.446	.094	.253	.088	.516	.177
Father's expectation	.083	.101	.102	.094	.334	.190
Mother's expectation	.512	.105	.398	.098	1.330	.196
Hispanic	-.326	.139	-.322	.121	-1.007	.244
Black	-.096	.157	-.621	.147	-1.177	.296
Other Private Sector	-.172	.068	-.023	.064	-.018	.128
High Performance schools	.979	.612	1.151	.572	2.504	1.151
R^2	.120		.166		.153	

*Numbers in parenthesis refer to total number of test items

TABLE A.4.3

SUBTEST REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) FOR MODEL INCLUDING PUBLIC SCHOOL SENIORS

	Reading (8)*		Vocabulary (8)		Mathematics (18)*	
	b	s.e.	b	s.e.	b	s.e.
Intercept	2.994	.079	2.881	.072	6.780	.152
BB101	-.008	.009	.034	.008	.068	.017
BB042	.055	.007	.078	.006	.123	.014
BB039	.065	.006	.080	.006	.177	.012
Number siblings	-.043	.007	-.062	.006	-.031	.013
BB103	.021	.008	.014	.007	-.056	.015
Two parent household	.066	.034	-.068	.031	.113	.066
BB037B	-.020	.019	.002	.017	-.022	.036
BB037C	-.118	.019	-.124	.017	-.269	.037
BB047G	.086	.012	.068	.011	.038	.023
BB104C	.056	.041	.065	.037	-.020	.079
BB104D	.045	.034	.157	.030	.319	.064
BB104G	.371	.039	.322	.035	.473	.075
BB104I	.369	.036	.338	.033	.993	.070
Father's expectation	.301	.038	.288	.035	.859	.073
Mother's expectation	.541	.037	.478	.034	1.372	.072
Hispanic	-1.072	.055	-.796	.050	-1.961	.105
Black	-1.088	.043	-1.052	.040	-2.416	.084
R^2	.196		.236		.264	

*Numbers in parenthesis refer to total number of items in subtest

TABLE A.4.4

SUBTEST REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) FOR MODEL INCLUDING PRIVATE SCHOOL SENIORS

	Reading (8)*		Vocabulary (8)*		Mathematics (18)*	
	b	s.e.	b	s.e.	b	s.e.
Intercept	3.462	.227	3.483	.200	8.610	.424
BB101	-.095	.025	-.054	.022	.024	.046
BB042	.039	.017	.081	.014	.103	.032
BB039	.087	.015	.076	.014	.207	.029
Number siblings	-.035	.018	-.079	.016	-.045	.034
BB103	.019	.021	.037	.018	-.052	.039
Two parent household	.107	.101	.179	.089	-.341	.188
BB037B	-.114	.050	-.103	.044	-.444	.093
BB037C	.013	.053	-.022	.046	.102	.099
BB047G	.041	.031	.060	.027	-.006	.057
BB104C	-.060	.132	-.113	.116	-.423	.245
BB104D	.039	.106	.141	.094	.428	.198
BB104G	.357	.129	.485	.114	.874	.240
BB104I	.521	.113	.394	.100	.949	.211
Father's expectation	.274	.113	.127	.100	.334	.212
Mother's expectation	.539	.117	.532	.103	2.035	.218
Hispanic	-.352	.146	-.332	.129	-1.127	.273
Black	-.591	.160	-.615	.141	-1.687	.299
Other Private Sector	.166	.074	-.044	.065	.137	.138
High Performance schools	1.115	.649	1.082	.573	2.564	1.212
R^2	.109		.152		.199	

TABLE A.4.5

REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) USING FIVE BACKGROUND VARIABLES FOR SUBTEST

	Reading (8)*		Vocabulary (8)*		Mathematics (18)*	
	b	s.e.	b	s.e.	b	s.e.
Public Sophomores						
Intercept	2.650	.038	2.482	.034	6.923	.067
BB101	.061	.008	.092	.007	.252	.015
BB042	.094	.007	.102	.006	.165	.013
BB039	.121	.006	.137	.005	.289	.011
Hispanic	-.824	.045	-.659	.045	-1.849	.089
Black	-1.151	.036	-1.073	.034	-2.744	.067
R^2	.128		.162		.184	
Public Seniors						
Intercept	3.554	.042	3.244	.039	7.956	.083
BB101	.063	.008	.093	.008	.232	.016
BB042	.082	.007	.106	.006	.188	.014
BB039	.116	.006	.131	.005	.298	.012
Hispanic	-1.205	.052	-.926	.052	-2.185	.114
Black	-1.329	.041	-1.283	.041	-2.870	.083
R^2	.129		.169		.177	
Catholic Sophomores						
Intercept	3.802	.129	3.722	.121	10.048	.238
BB101	-.034	.024	.022	.023	.019	.044
BB042	.074	.017	.072	.016	.053	.032
BB039	.072	.016	.089	.015	.156	.030
Hispanic	-.506	.141	-.492	.132	-1.556	.258
Black	-.562	.160	-1.023	.150	-1.992	.293
R^2	.036		.065		.052	
Catholic Seniors						
Intercept	4.757	.136	4.747	.120	10.434	.261
BB101	-.042	.026	-.004	.023	.066	.051
BB042	.007	.019	.062	.017	.079	.037
BB039	.087	.019	.077	.015	.210	.033
Hispanic	-.430	.157	-.492	.137	-1.259	.301
Black	-.599	.173	-.816	.152	-1.675	.332
R^2	.021		.046		.055	
Other Private Sophomores						
Intercept	2.207	.300	1.745	.274	5.527	.592
BB101	.101	.052	.240	.047	.489	.103
BB042	.201	.042	.063	.038	.192	.083
BB039	.071	.039	.232	.035	.345	.076
Hispanic	-.536	.409	-.459	.374	-.262	.808
Black	1.055	.589	.515	.541	.375	1.161
R^2	.135		.239		.182	
Other Private Seniors						
Intercept	3.602	.318	3.380	.296	7.740	.607
BB101	.006	.059	.079	.055	.186	.114
BB042	.109	.047	.145	.043	.200	.090
BB039	.174	.044	.147	.041	.459	.086
Hispanic	-.456	.461	-.258	.429	-1.319	.891
Black	-.882	.471	-.522	.438	-2.039	.909
R^2	.142		.180		.238	

*Numbers in parentheses refer to number of items in test

TABLE A.4.6

FULL TEST REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) FOR MODEL INCLUDING ALL SOPHOMORES

	Reading (19)*		Vocabulary (21)*		Mathematics (38)*	
	b	s.e.	b	s.e.	b	s.e.
Intercept	5.665	.123	6.933	.134	11.506	.235
BB101	.022	.011	.107	.011	.147	.022
BB042	.121	.011	.166	.011	.204	.022
BB039	.175	.011	.222	.011	.357	.022
Number of Siblings	-.113	.011	-.180	.011	-.136	.022
BB103	.065	.011	.067	.011	.232	.022
Two-parent household	.143	.056	.052	.056	.346	.101
BB037B	.010	.034	-.039	.034	.008	.056
BB037C	-.226	.034	-.216	.034	-.511	.056
BB047G	.158	.022	.147	.022	.125	.034
BB104C	.402	.067	.300	.067	.337	.123
BB104D	.053	.056	.211	.056	.499	.101
BB104G	.601	.056	.791	.067	.720	.112
BB104I	.736	.056	.815	.056	1.369	.101
Father's Expectations	.325	.056	.291	.067	.928	.112
Mother's Expectations	1.018	.056	1.083	.067	2.134	.112
Hispanic	-1.516	.078	-1.722	.067	-3.031	.145
Black	-1.847	.067	-2.615	.067	-4.099	.123
Catholic Sector	.540	.089	.921	.089	.882	.156
Other Private Sector	.063	.112	.435	.123	.752	.212
High performance school	2.690	1.352	3.190	1.463	5.780	2.513
R^2	.239		.302		.282	

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*Numbers in parentheses refer to total number of test items.

TABLE A.4.7

FULL TEST REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) FOR MODEL INCLUDING ALL SENIORS

	Reading (20)*		Vocabulary		Mathematics (32)*	
	b	s.e.	b	s.e.	b	s.e.
Intercept	7.386	.145	8.921	.186	13.342	.207
BB101	-.019	.021	.007	.021	.096	.021
BB042	.133	.010	.238	.021	.198	.021
BB039	.140	.010	.231	.010	.271	.021
Number siblings	-.095	.010	-.196	.010	-.038	.021
BB103	.034	.010	.039	.021	.075	.021
Two parent household	.074	.062	-.072	.083	.077	.093
BB037B	-.036	.031	-.071	.041	-.140	.052
BB037C	-.226	.031	-.317	.041	-.347	.052
BB047G	.160	.021	.172	.031	.042	.031
BB104C	.207	.072	.034	.093	-.051	.114
BB104D	.065	.062	.344	.083	.481	.093
BB104G	.921	.072	.989	.093	.625	.104
BB104I	.865	.072	.908	.083	1.582	.093
Father's expectation	.708	.072	.681	.093	1.248	.104
Mother's expectation	1.181	.072	1.329	.083	2.196	.104
Hispanic	-2.253	.083	-2.176	.103	-2.851	.115
Black	-2.307	.103	-2.689	.124	-3.413	.114
Catholic sector	.320	.093	1.146	.124	.640	.135
Other Private sector	.776	.134	.991	.165	.961	.186
High performance schools	2.687	1.437	5.106	1.831	4.752	2.081
R^2	.239		.240		.280	

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*Numbers in parentheses refer to total number of test items

TABLE A.4.8
REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) FOR MODEL OF EDUCATIONAL EXPECTATIONS

	Sophomores				Seniors			
	Public		Private		Public		Private	
	b	s.e	b	s.e	b	s.e.	b	s.e.
Intercept	.810	.032	1.205	.092	.977	,032	1.366	.088
BB101	.028	.003	.029	.010	.014	.003	.010	.010
BB042	.055	.002	.042	.007	.050	.003	.052	.006
BB039	.067	.003	.065	.006	.065	.002	.055	.006
Number siblings	-.023	.003	-.046	.008	-.018	.003	-.019	.007
BB103	.015	.003	.005	.009	.012	.003	.013	.008
Two parent household	-.036	.014	-.038	.040	-.071	.014	-.245	.039
BB037B	.002	.008	.028	.019	0	.007	-.024	.019
BB037C	-.015	.007	-.027	.019	-.009	.007	.030	.021
BB047G	.061	.005	.062	.012	.053	.004	.038	.012
BB104C	.012	.016	-.043	.049	-.039	.016	-.048	.051
BB104D	.050	.013	.067	.039	.049	.014	.065	.042
BB104G	.093	.016	.097	.049	.080	.016	.115	.050
BB104I	.059	.014	.145	.040	.122	.015	.130	.044
Father's expectation	.317	.015	.332	.043	.407	.015	.350	.045
Mother's expectation	.577	.015	.510	.045	.588	.015	.569	.046
Hispanic	.059	.021	.067	.055	.046	.022	.331	.056
Black	.231	.016	.391	.068	.312	.017	.311	.062
Other Private Sector	DNA	DNA	-.142	.030	DNA	DNA	-.006	.029
High Performance schools	DNA	DNA	.184	.260	DNA	DNA	.298	.239
R^2	.364		.309		.391		.331	

TABLE A.4.9

LOGIT ANALYSIS FOR TABLE 6.3.2: PERCENT OF SENIORS AND SOPHOMORES IN PUBLIC AND PRIVATE SCHOOLS INDICATING EXPECTATIONS TO ATTEND COLLEGE AT EARLIER GRADES: ACTUAL PERCENT[a] AND STANDARDIZED PERCENT[b]; SPRING 1980

(Unweighted and listwise deletion)

At Earlier Grade	Public	Catholic	Other Private
Seniors			
a) Actual percent			
At 8th grade	.51	.70	.69
At 9th grade	.55	.75	.72
At 10th grade	.60	.79	.80
At 11th grade	.66	.84	.80
b) Standardized percent			
At 8th grade	.49	.60	.57
At 9th grade	.54	.66	.61
At 10th grade	.61	.71	.72
At 11th grade	.70	.80	.75
Sophomores			
c) Actual percent			
At 6th grade	.45	.59	.62
At 7th grade	.49	.66	.65
At 8th grade	.56	.77	.74
At 9th grade	.64	.82	.78
d) Standardized percent			
At 6th grade	.45	.49	.50
At 7th grade	.49	.56	.53
At 8th grade	.56	.70	.64
At 9th grade	.64	.76	.72

[a] Actual percent differs from those given in section 6.3 due to the listwise deletion required by the logit program.

[b] Backgrounds are standardized to public school sophomores.

TABLE A.4.10

DIFFERENCES IN LOGITS[a] FOR COLLEGE EXPECTATIONS, STANDARDIZED TO PUBLIC SCHOOL SOPHOMORES, BETWEEN EACH TYPE OF PRIVATE SCHOOL AND THE PUBLIC SCHOOLS: SPRING 1980

(Based on logit analysis Table A.4.10)

At Earlier Grade	Catholic	Other Private
a) Seniors:		
At 8th grade	.54	.36
At 9th grade	.77	.39
At 10th grade	.88	1.01
At 11th grade	1.67	.67
b) Sophomores:		
At 6th grade	.14	.18
At 7th grade	.31	.17
At 8th grade	1.06	.51
At 9th grade	1.39	.79
c) Sophomores and Seniors:		
At 6th grade (sophomores)	.14	.18
At 7th grade (sophomores)	.31	.17
At 8th grade (both)	.80	.76
At 9th grade (both)	1.08	.73
At 10th grade (seniors)	.88	1.01
At 11th grade (seniors)	1.67	.67

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[a] See text on page 226 for method of calculating logits.

TABLE A.4.11

REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) FOR FIVE BACKGROUND VARIABLE MODEL OF EDUCATIONAL EXPECTATIONS

	Sophomores						Seniors					
	Public		Catholic		Other Private		Public		Catholic		Other Private	
	b	s.e.	b	s.e.	b	s.e.	b	s.e.	b	s.e.	b	s.e.
Intercept	1.083	.018	1.809	.060	1.270	.129	1.287	.019	1.945	.060	1.545	.128
BB101	.071	.003	.053	.012	.101	.022	.055	.042	.042	.011	.041	.023
BB042	.088	.003	.052	.008	.075	.018	.080	.003	.055	.009	.080	.019
BB039	.110	.002	.086	.007	.084	.017	.111	.003	.071	.008	.113	.018
Hispanic	.079	.023	.089	.066	-.045	.175	.041	.025	.341	.068	.435	.184
Black	.205	.017	.352	.075	.743	.251	.302	.019	.446	.075	.148	.188
R^2	.204		.138		.226		.195		.124		.278	

TABLE A.4.12

PROBIT ANALYSIS PREDICTING ENTRY INTO PRIVATE SECTOR: COEFFICIENTS FROM TWO MODELS

Variable	Model	
	A	B
Intercept	-2.791*	-2.858
1. Income	.086*	.083*
2. Region (Northeast versus others)	.195*	.192
3. Catholic religious background	.868*	.866*
4. Mother's education	.082*	.075*
5. Number of siblings	-.031*	-.027*
6. Number rooms in home	.019*	.017*
7. Eighth grade college plans	DNA	.263*
8. Mother worked while child in elementary school	-.037	DNA
9. Mother worked before child in elementary school	.006	DNA
10. Talk with parents	-.019	-.025
11. BB104C	-.035	-.039
12. BB104D	.192*	.189
13. BB104G	.159*	.146*
14. BB104I	-.003	.017
15. Two parent family	-.110*	-.097*
16. Mother's school expectations	.369*	.268*
17. Hispanic	.196*	.179*
18. Black	.360*	.324*

*Significant at .05 level for two tail test.

TABLE A.4.13

REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) FOR MODELS OF PUBLIC SOPHOMORE ACHIEVEMENT WHICH INCLUDE SCHOOL CHARACTERISTICS

Independent variables[a]	Reading (8)		Vocabulary (8)		Mathematics (18)	
	b	s.e.	b	s.e.	b	s.e.
Intercept	.703	.211	.912	.196	2.447	.395
BB101	-.007	.008	.032	.007	.083	.015
BB042	.044	.007	.056	.006	.055	.013
BB039	.062	.006	.082	.006	.143	.011
Number siblings	-.046	.006	-.060	.006	-.068	.011
BB103	.026	.007	.021	.006	.094	.013
Two parent household	.019	.031	.001	.029	.133	.057
BB037B	.012	.016	-.041	.015	.045	.031
BB037C	-.099	.016	-.036	.015	-.214	.030
BB047G	.047	.010	.039	.009	-.018	.019
BB104C	.238	.035	.109	.033	.249	.056
BB104D	-.036	.029	.024	.027	.154	.054
BB104G	.225	.034	.264	.032	.323	.064
BB104I	.306	.031	.268	.029	.605	.057
Father's expectation	.113	.033	.071	.031	.288	.063
Mother's expectation	.404	.033	.315	.031	.946	.062
Hispanic	-.653	.045	-.524	.042	-1.475	.084
Black	-.876	.038	-.816	.035	-2.087	.071
BB011C	.686	.029	.686	.026	DNA	DNA
BB011D	DNA	DNA	DNA	DNA	2.073	.052
Homework[b]	.047	.003	.034	.003	.114	.007
BB016	-.060	.009	-.051	.008	-.243	.017
BB059E	-.069	.027	-.056	.025	-.245	.051
MBB053E	.246	.075	.100	.070	.743	.140
MBB053F	-.109	.063	-.199	.058	-.590	.119
MBB053G	-.349	.076	-.014	.071	-.685	.142
MYB019A	.405	.074	.219	.068	.642	.139
MYB019B	-.077	.054	-.230	.050	-.422	.100
MYB019E	.113	.060	.187	.056	.341	.114
MYB019F	.469	.080	.483	.074	1.452	.149
R^2	.226		.248		.333	

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[a] The variables prefixed with the letter M are school level means for the individual level variable. The codings for the latter are found in Appendix 3.

[b] Recoded as actual hours. See appendix 3 for specific coding structure.

TABLE A.4.14

REGRESSION COEFFICIENTS, STANDARD ERRORS, AND EXPLAINED VARIANCE (R^2) FOR MODELS OF PUBLIC SENIOR ACHIEVEMENT WHICH INCLUDE SCHOOL CHARACTERISTICS

Independent variables[a]	Reading (8)		Vocabulary (8)		Mathematics (18)	
	b	s.e.	b	s.e.	b	s.e.
Intercept	1.806	.243	2.099	.222	3.361	.387
BB101	-.006	.008	.028	.007	.024	.014
BB042	.041	.007	.064	.006	.028	.012
BB039	.050	.006	.063	.005	.040	.011
Number siblings	-.043	.006	-.062	.006	.015	.011
BB103	.014	.007	.010	.007	.021	.014
Two parent household	.055	.034	-.061	.031	.069	.054
BB037B	-.021	.018	0	.017	.004	.028
BB037C	-.109	.019	-.113	.017	-.141	.030
BB047G	.045	.012	.035	.011	-.023	.018
BB104C	.065	.040	.078	.037	-.056	.063
BB104D	.012	.033	.122	.030	.069	.052
BB104G	.337	.038	.286	.035	.339	.060
BB104I	.319	.036	.297	.033	.437	.057
Father's expectation	.222	.037	.217	.034	.100	.059
Mother's expectation	.427	.037	.373	.034	.312	.059
Hispanic	-1.054	.054	-.802	.049	-1.495	.085
Black	-1.095	.044	-1.066	.040	-2.062	.071
BB011C	.710	.031	.717	.027	DNA	DNA
BB011D	DNA	DNA	DNA	DNA	.895	.054
Advanced math course[b]	DNA	DNA	DNA	DNA	1.495	.017
Homework[c]	.057	.004	.040	.004	.027	.006
BB016	-.035	.011	-.025	.010	-.049	.016
BB059E	-.032	.027	.028	.025	-.082	.044
MBB053E	.336	.083	.240	.076	.064	.133
MBB053F	-.126	.073	-.101	.066	.192	.115
MBB053G	-.256	.082	-.187	.076	-.674	.132
MYB019A	.304	.081	.238	.074	.375	.128
MYB019B	-.067	.059	-.332	.054	-.415	.094
MYB019E	-.028	.066	.191	.060	.382	.105
MYB019F	.378	.094	.256	.085	1.209	.150
R^2	.231		.271		.524	

[a] The variables prefixed with the letter M are school level means for the individual level variables. The codings for the latter are found in Appendix B.

[b] Number of advanced mathematics courses taken, BB005 in Appendix B.

[c] Recoded as actual hours. See appendix B for specific coding structure.

TABLE A.4.15

ACHIEVEMENT DIFFERENCES BETWEEN PRIVATE AND PUBLIC SCHOOLS DUE TO VARIOUS AREAS OF SCHOOL FUNCTIONING FOR PRIVATE SCHOOLS THAT FUNCTION AS PUBLIC SCHOOLS DO FOR THE AVERAGE PUBLIC SCHOOL SOPHOMORE

	Catholic			Other Private		
	Reading	Vocabulary	Mathematics	Reading	Vocabulary	Mathematics
Sophomores						
Coursework	.03	.03	-.05	.09	.08	.18
Homework	-.02	-.01	-.10	-.02	-.01	-.12
Attendance	-.10	-.07	-.13	-.01	-.01	-.02
Disciplinary climate	-.34	-.50	-.44	-.39	-.52	-.41
Student behavior	-.33	-.44	-.57	-.33	-.57	-.61
TOTAL	-.76	-.99	-1.29	-.66	-1.03	-.98
Seniors						
Coursework	-.01	-.01	-1.01	.06	.08	-.44
Homework	-.04	-.04	-.01	-.06	-.06	-.02
Attendance	-.06	-.03	-.15	-.03	-.01	-.06
Disciplinary climate	-.62	-.72	-.63	-.68	-.71	-.45
Student behavior	-.06	-.22	.40	-.06	-.21	.44
TOTAL	-.79	-1.02	-1.40	-.77	-.91	-.53

A.5 Means, standard deviations and correlations for variables used in analysis for chapters 6 and 7

Tables in this section give means, standard deviations, and correlations by grade and sector for the variables used in the analysis. Variable identification can be obtained from Appendix B.

TABLE A.5.1

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SOPHOMORES

OBS	NAME	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN
1	MEAN	4.057	4.103	4.531	3.000	6.839	0.774	2.022	1.773	2.228	0.766	0.639	0.733	0.697	0.510	0.592	0.076
2	SIDEV	1.748	2.180	2.552	2.057	1.924	0.419	0.868	0.888	1.138	0.424	0.480	0.442	0.460	0.500	0.491	0.265
3	BB101	1.000	0.274	0.343	-0.137	0.316	0.274	-0.092	-0.097	0.080	0.151	0.200	0.191	0.207	0.264	0.191	-0.108
4	BB042	0.274	1.000	0.547	-0.137	0.208	0.019	0.042	0.036	0.119	0.104	0.170	0.166	0.128	0.264	0.269	-0.096
5	BB039	0.343	0.547	1.000	-0.141	0.246	0.014	-0.080	-0.073	0.123	0.105	0.192	0.187	0.158	0.349	0.285	-0.107
6	SIBS	-0.137	-0.137	-0.141	1.000	0.010	-0.046	-0.035	-0.002	-0.087	-0.055	-0.103	-0.063	-0.131	-0.128	-0.111	0.075
7	BB103	0.316	0.208	0.246	0.010	1.000	0.205	-0.115	-0.107	0.055	0.170	0.192	0.205	0.162	0.155	0.115	-0.122
8	BOTHPAR	0.274	0.019	0.014	-0.046	0.205	1.000	-0.151	-0.152	0.018	0.138	0.158	0.140	0.147	0.192	0.088	-0.024
9	BB037B	-0.092	0.042	-0.080	-0.035	-0.115	-0.151	1.000	0.678	-0.026	-0.045	-0.084	-0.050	-0.063	-0.059	-0.004	0.017

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F
1	0.146	0.216	0.329	0.277	0.178	0.279	0.217	0.226	3.752	2.315	0.293	2.486	2.348	2.213	1.626	1.448	1.931	2.742
2	0.353	0.412	0.470	0.447	0.382	0.448	0.412	0.418	3.221	1.345	0.455	0.222	0.244	0.219	0.209	0.293	0.249	0.187
3	-0.201	0.008	-0.108	0.071	0.043	0.048	0.099	0.093	0.116	-0.053	0.034	0.056	0.027	0.028	0.027	-0.071	0.106	0.151
4	-0.018	0.028	-0.075	-0.019	0.085	-0.022	0.160	0.121	0.158	-0.079	0.001	0.084	0.006	0.065	0.050	-0.083	0.115	0.088
5	-0.079	0.026	-0.076	-0.036	0.109	0.008	0.162	0.139	0.183	-0.078	-0.004	0.109	0.014	0.082	0.038	-0.121	0.134	0.126
6	0.153	-0.012	-0.006	0.017	-0.000	0.078	-0.043	-0.033	-0.042	0.081	0.040	-0.012	-0.024	-0.013	-0.006	0.011	-0.042	-0.081
7	-0.158	0.085	-0.120	0.138	-0.105	0.051	0.085	0.082	0.113	-0.076	-0.010	0.034	0.045	-0.016	0.077	0.021	0.047	0.110
8	-0.245	-0.008	-0.054	0.063	0.002	0.069	0.028	0.034	0.061	-0.118	-0.048	-0.000	0.037	-0.003	0.033	0.039	0.043	0.133
9	0.185	-0.049	0.086	-0.037	-0.008	-0.073	-0.016	-0.028	-0.035	0.039	0.025	0.000	0.000	0.016	-0.017	0.006	-0.032	-0.066

OBS	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YB072A	YB072B	BB068A	BB068B
1	2.394	0.367	0.295	0.461	0.221	7.036	3.603	3.689	9.396	8.821	10.674	18.396	2.267	0.396	0.432	0.507	0.582
2	0.331	0.155	0.456	0.498	0.415	0.736	2.000	1.883	4.036	3.845	4.320	7.321	1.045	0.489	0.495	0.500	0.493
3	-0.015	0.089	0.168	-0.050	-0.118	0.088	0.187	0.232	0.258	0.226	0.274	0.270	0.245	0.200	0.207	0.200	0.169
4	0.002	0.117	0.205	-0.080	-0.128	0.094	0.216	0.256	0.235	0.243	0.277	0.258	0.361	0.259	0.272	0.277	0.262
5	0.015	0.140	0.248	-0.089	-0.169	0.137	0.257	0.306	0.301	0.294	0.334	0.324	0.403	0.308	0.319	0.313	0.297
6	0.036	-0.010	-0.105	0.006	0.097	-0.044	-0.143	-0.168	-0.148	-0.163	-0.200	-0.152	-0.139	-0.092	-0.098	-0.104	-0.090
7	-0.079	-0.019	0.134	-0.032	-0.095	-0.050	0.171	0.179	0.222	0.189	0.214	0.234	0.166	0.142	0.142	0.125	0.101
8	-0.050	-0.034	0.070	0.004	-0.059	-0.056	0.116	0.116	0.160	0.132	0.146	0.163	0.061	0.040	0.043	0.036	0.036
9	-0.011	-0.026	-0.045	0.012	0.034	-0.008	-0.079	-0.089	-0.099	-0.088	-0.105	-0.109	-0.021	-0.016	-0.015	-0.008	-0.003

TABLE A.5.1 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SOPHOMORES

OBS	NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN
10	BB037C	-0.097	0.036	-0.073	-0.002	-0.107	-0.152	0.578	1.000	-0.042	-0.059	-0.094	-0.064	-0.069	-0.060	-0.005	0.031
11	BB047G	0.080	0.119	0.123	-0.087	0.055	0.018	-0.026	-0.042	1.000	0.061	0.068	0.094	0.077	0.137	0.143	-0.017
12	BB104C	0.151	0.104	0.105	-0.055	0.170	0.138	-0.045	-0.059	0.061	1.000	0.442	0.574	0.460	0.156	0.158	-0.073
13	BB104D	0.200	0.170	0.192	-0.103	0.192	0.158	-0.084	-0.094	0.068	0.442	1.000	0.440	0.418	0.182	0.175	-0.061
14	BB104G	0.191	0.166	0.187	-0.063	0.205	0.140	-0.050	-0.064	0.094	0.574	0.440	1.000	0.475	0.180	0.178	-0.097
15	BB104I	0.207	0.128	0.158	-0.131	0.162	0.147	-0.063	-0.069	0.077	0.460	0.418	0.475	1.000	0.173	0.162	-0.074
16	FATEXP	0.264	0.264	0.349	-0.128	0.155	0.192	-0.059	-0.060	0.137	0.156	0.182	0.180	0.173	1.000	0.691	-0.016
17	MOTEXP	0.191	0.269	0.285	-0.111	0.115	0.088	-0.004	-0.005	0.143	0.158	0.175	0.178	0.162	0.691	1.000	-0.006
18	HISPAN	-0.108	-0.096	-0.107	0.075	-0.122	-0.024	0.017	0.031	-0.017	-0.073	-0.061	-0.097	-0.074	-0.016	-0.006	1.000

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F
10	0.239	-0.045	0.118	-0.064	-0.021	-0.089	-0.014	-0.021	-0.035	0.037	0.006	0.004	0.001	0.013	-0.023	0.006	-0.056	-0.091
11	-0.029	-0.022	-0.024	0.008	0.044	0.008	0.103	0.073	0.170	-0.039	-0.068	0.036	0.007	0.034	0.010	-0.027	0.014	0.036
12	-0.114	0.043	-0.052	0.004	0.013	0.119	0.075	0.065	0.110	-0.071	0.036	0.029	0.040	0.025	0.022	0.005	0.056	0.106
13	-0.165	0.057	-0.141	0.035	0.072	0.117	0.090	0.084	0.130	-0.085	0.020	0.029	0.008	0.018	0.018	-0.041	0.083	0.116
14	-0.141	0.033	-0.084	0.014	0.053	0.104	0.104	0.085	0.124	-0.071	0.039	0.032	0.017	0.026	0.030	-0.017	0.076	0.118
15	-0.181	0.040	-0.098	0.033	0.040	0.112	0.089	0.085	0.108	-0.071	0.027	0.030	0.027	0.018	0.022	-0.012	0.067	0.133
16	-0.053	0.019	-0.021	-0.047	0.061	0.051	0.167	0.150	0.220	-0.131	-0.050	0.062	0.020	0.057	0.010	-0.077	0.074	0.085
17	0.007	0.021	-0.000	-0.055	0.042	0.043	0.165	0.148	0.219	-0.124	-0.049	0.053	0.009	0.049	0.011	-0.076	0.058	0.048
18	-0.118	-0.024	0.011	-0.079	0.105	0.165	-0.017	-0.022	-0.045	0.062	0.024	0.004	-0.033	0.023	-0.068	-0.040	-0.006	-0.055

OBS	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YB072A	YB072B	BB068A	BB068B
10	-0.004	-0.034	-0.046	-0.005	0.054	-0.002	-0.113	-0.103	-0.136	-0.126	-0.136	-0.147	-0.026	-0.011	-0.019	-0.017	-0.007
11	0.004	0.025	0.117	-0.066	-0.043	0.046	0.118	0.120	0.100	0.127	0.128	0.109	0.174	0.110	0.133	0.150	0.159
12	-0.018	0.023	0.127	-0.012	-0.093	-0.015	0.202	0.191	0.206	0.222	0.227	0.210	0.152	0.094	0.103	0.095	0.102
13	0.011	0.073	0.154	-0.036	-0.103	0.032	0.189	0.207	0.232	0.217	0.246	0.241	0.188	0.129	0.142	0.134	0.135
14	-0.006	0.056	0.149	-0.015	-0.114	-0.003	0.230	0.240	0.242	0.258	0.280	0.250	0.200	0.138	0.148	0.139	0.145
15	-0.013	0.036	0.143	-0.025	-0.101	0.012	0.233	0.237	0.256	0.263	0.283	0.268	0.176	0.122	0.134	0.126	0.118
16	-0.017	0.073	0.303	-0.103	-0.187	0.108	0.241	0.246	0.281	0.267	0.277	0.307	0.468	0.312	0.359	0.422	0.476
17	-0.025	0.061	0.303	-0.105	-0.181	0.107	0.242	0.239	0.285	0.267	0.270	0.297	0.496	0.301	0.360	0.435	0.519
18	0.061	0.051	-0.053	-0.001	0.055	0.069	-0.117	-0.109	-0.133	-0.137	-0.140	-0.140	-0.047	-0.045	-0.048	-0.031	-0.015

TABLE A.5.1 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SOPHOMORES

OBS	NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN
19	BLACK	-0.201	-0.018	-0.079	0.153	-0.158	-0.245	0.185	0.239	-0.029	-0.114	-0.165	-0.141	-0.181	-0.053	0.007	-0.118
20	REGION1	0.008	0.028	0.026	-0.012	0.085	-0.008	-0.049	-0.045	-0.022	0.043	0.057	0.033	0.040	0.019	0.021	-0.024
21	REGION2	-0.108	-0.075	-0.076	-0.006	-0.120	-0.054	0.086	0.118	-0.024	-0.052	-0.141	-0.084	-0.098	-0.021	-0.000	0.011
22	REGION3	0.071	-0.019	-0.036	0.017	0.138	0.063	-0.037,	-0.064	0.008	0.004	0.035	0.014	0.033	-0.047	-0.055	-0.079
23	REGION4	0.043	0.085	0.109	-0.000	-0.105	0.002	-0.008	-0.021	0.044	0.013	0.072	0.053	0.040	0.061	0.042	0.105
24	RELCATH	0.048	-0.022	0.008	0.078	0.051	0.069	-0.073	-0.089	0.008	0.119	0.117	0.104	0.112	0.051	0.043	0.165
25	BB011C	0.099	0.160	0.162	-0.043	0.085	0.028	-0.016	-0.014	0.103	0.075	0.090	0.104	0.089	0.167	0.165	-0.017
26	BB011D	0.093	0.121	0.139	-0.033	0.082	0.034	-0.028	-0.021	0.073	0.065	0.084	0.085	0.085	0.150	0.148	-0.022
27	HMWRK	0.116	0.158	0.183	-0.042	0.113	0.061	-0.035	-0.035	0.170	0.110	0.130	0.124	0.108	0.220	0.219	-0.045

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F
19	1.000	-0.011	0.209	-0..108	-0.118	-0.202	-0.005	-0.021	-0.027	0.003	-0.006	-0.001	-0.010	0.007	-0.006	-0.041	-0.101	-0.298
20	-0.011	1.000	-0.368	-0.325	-0.244	0.192	0.027	0.017	0.072	0.012	0.034	-0.032	-0.107	-0.091	-0.047	-0.117	-0.132	-0.225
21	0.209	-0.368	1.000	-0.433	-0.326	-0.219	-0.008	-0.034	-0.069	-0.038	-0.086	0.032	0.267	0.114	0.024	0.173	-0.059	0.008
22	-0.108	-0.325	-0.433	1.000	-0.288	0.023	-0.035	0.013	0.009	-0.038	-0.032	-0.085	-0.053	-0.172	0.084	0.067	0.028	0.057
23	-0.118	-0.244	-0.326	-0.288	1.000	0.035	0.022	0.008	-0.003	0.079	0.106	0.095	-0.150	0.160	-0.077	-0.166	0.182	0.166
24	-0.202	0.192	-0.219	0.023	0.035	1.000	0.001	0.012	0.036	0.012	0.054	-0.013	-0.048	-0.029	-0.025	-0.072	0.020	0.027
25	-0.005	0.027	-0.008	-0.035	0.022	0.001	1.000	0.529	0.187	-0.086	-0.048	0.026	0.005	0.022	-0.001	-0.037	0.011	-0.010
26	-0.021	0.017	-0.034	0.013	0.008	0.012	0.529	1.000	0.177	-0.097	-0.050	0.021	0.005	0.005	0.014	-0.007	0.011	0.006
27	-0.027	0.072	-0.069	0.009	-0.003	0.036	0.187	0.177	1.000	-0.191	-0.172	0.068	0.037	0.041	0.069	-0.007	0.070	0.066

OBS	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YB072A	YB072B	BB068A	BB068B
19	0.010	-0.013	-0.039	-0.072	0.115	0.098	-0.215	-0.224	-0.264	-0.239	-0.293	-0.273	0.018	0.001	0.004	0.035	0.061
20	0.025	0.053	0.130	-0.139	0.027	0.115	0.043	0.082	0.053	0.045	0.088	0.066	0.028	0.032	0.029	0.022	0.013
21	-0.172	-0.251	-0.061	0.007	0.053	-0.084	-0.115	-0.141	-0.166	-0.132	-0.179	-0.177	-0.033	-0.023	-0.022	-0.019	-0.012
22	-0.134	-0.086	-0.050	0.066	-0.022	-0.126	0.065	0.023	0.097	0.068	0.050	0.094	-0.030	-0.032	-0.043	-0.043	-0.049
23	0.341	0.348	-0.006	0.063	-0.068	0.128	0.020	0.059	0.033	0.035	0.066	0.036	0.046	0.030	0.045	0.050	0.058
24	0.047	0.082	0.057	-0.023	-0.023	0.079	0.065	0.073	0.092	0.069	0.090	0.095	0.027	0.012	0.014	0.012	0.024
25	-0.009	0.024	0.265	-0.157	-0.088	0.064	0.225	0.238	0.234	0.250	0.252	0.252	0.260	0.183	0.196	0.201	0.197
26	-0.006	0.004	0.231	-0.129	-0.084	0.014	0.210	0.184	0.308	0.234	0.199	0.329	0.241	0.155	0.173	0.185	0.172
27	-0.064	0.002	0.275	-0.150	-0.106	0.039	0.207	0.195	0.250	0.217	0.217	0.259	0.338	0.190	0.224	0.256	0.272

TABLE A.5.1 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SOPHOMORES 4

OBS	NAME_	BB101	BB042	BB038	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MUTEXP	HISPAN
28	BBO16	-0.053	-0.079	-0.078	0.081	-0.076	-0.118	0.039	0.037	-0.039	-0.071	-0.085	-0.071	-0.071	-0.131	-0.124	0.062
29	BBO59E	0.034	0.001	-0.004	0.040	-0.010	-0.048	0.025	0.006	-0.068	0.036	0.020	0.039	0.027	-0.050	-0.049	0.024
30	MBBO53E	0.056	0.084	0.109	-0.012	0.034	-0.000	0.000	0.004	0.036	0.029	0.029	0.032	0.030	0.062	0.053	0.004
31	MBBO53F	0.027	0.006	0.014	-0.024	0.045	0.037	0.000	0.001	0.007	0.040	0.008	0.017	0.027	0.020	0.009	-0.033
32	MBBO53G	0.028	0.065	0.082	-0.013	-0.016	-0.003	0.016	0.013	0.034	0.025	0.018	0.026	0.018	0.057	0.049	0.023
33	MYBO19A	0.027	0.050	0.038	-0.006	0.077	0.033	-0.017	-0.023	0.010	0.022	0.018	0.030	0.022	0.010	0.011	-0.068
34	MYBO19B	-0.071	-0.083	-0.121	0.011	0.021	0.039	0.006	0.006	-0.027	0.005	-0.041	-0.017	-0.012	-0.077	-0.076	-0.040
35	MYBO19E	0.106	0.115	0.134	-0.042	0.047	0.043	-0.032	-0.056	0.044	0.056	0.083	0.076	0.067	0.074	0.058	-0.006
36	MYBO19F	0.151	0.088	0.126	-0.081	0.110	0.133	-0.066	-0.081	0.036	0.106	0.116	0.118	0.133	0.085	0.018	-0.055

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BBO11C	BBO11D	HMWRK	BBO16	BBO59E	MBBO53E	MBBO53F	MBBO53G	MYBO19A	MYBO19B	MYBO19E	MYBO19F
28	0.003	0.012	-0.038	-0.038	0.079	0.012	-0.086	-0.097	-0.191	1.000	0.294	-0.036	-0.078	-0.031	-0.083	-0.065	-0.036	-0.069
29	-0.006	0.034	-0.086	-0.032	0.106	0.054	-0.048	-0.050	-0.172	0.294	1.000	-0.016	-0.137	-0.009	-0.108	-0.195	-0.020	-0.054
30	-0.001	-0.032	0.032	-0.085	0.095	-0.013	0.026	0.021	0.068	-0.036	-0.016	1.000	0.525	0.679	0.277	0.130	0.374	0.309
31	-0.010	-0.107	0.267	-0.053	-0.150	-0.048	0.005	0.006	0.037	-0.078	-0.137	0.525	1.000	0:508	0.321	0.386	0.256	0.312
32	0.007	-0.091	0.114	-0.172	0.160	-0.029	0.022	0.005	0.041	-0.031	-0.009	0.679	0.508	1.000	0.224	0.065	0.376	0.284
33	-0.006	-0.047	0.024	0.084	-0.077	-0.025	-0.001	0.014	0.069	-0.083	-0.108	0.277	0.321	0.224	1.000	0.593	0.427	0.321
34	-0.041	-0.117	0.173	0.067	-0.166	-0.072	-0.037	-0.007	-0.007	-0.065	-0.195	0.130	0.386	0.065	0.593	1.000	0.257	0.254
35	-0.101	-0.132	-0.059	0.028	0.182	0.020	0.011	0.011	0.070	-0.036	-0.020	0.374	0.256	0.376	0.427	0.257	1.000	0.546
36	-0.298	-0.225	0.008	0.057	0.166	0.027	-0.010	0.006	0.066	-0.069	-0.054	0.309	0.312	0.284	0.321	0.254	0.546	1.000

OBS	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YBO72A	YBO72B	BBO68A	BBO68B
28	0.178	0.114	-0.145	0.078	0.051	0.032	-0.129	-0.120	-0.188	-0.135	-0.133	-0.191	-0.189	-0.072	-0.094	-0.119	-0.153
29	0.150	0.273	-0.098	0.077	0.015	0.112	-0.058	-0.042	-0.080	-0.052	-0.043	-0.082	-0.113	-0.031	-0.050	-0.080	-0.114
30	-0.134	-0.044	0.068	-0.046	-0.004	-0.037	0.060	0.064	0.073	0.068	0.069	0.081	0.093	0.069	0.071	0.071	0.071
31	-0.320	-0.426	0.048	-0.053	0.018	-0.063	0.031	0.017	0.023	0.026	0.016	0.025	0.033	0.015	0.012	0.012	0.009
32	-0.106	-0.016	0.034	-0.033	0.005	0.070	0.025	0.047	0.029	0.030	0.043	0.034	0.082	0.053	0.059	0.066	0.064
33	-0.272	-0.291	0.035	-0.002	-0.027	-0.362	0.082	0.054	0.080	0.081	0.059	0.079	0.039	0.017	0.017	0.009	0.018
34	-0.245	-0.601	-0.034	0.018	0.022	-0.584	0.009	-0.035	-0.008	0.005	-0.037	-0.014	-0.078	-0.070	-0.076	-0.084	-0.078
35	-0.073	-0.012	0.060	0.021	-0.070	-0.153	0.111	0.121	0.133	0.122	0.133	0.143	0.099	0.065	0.069	0.062	0.069
36	-0.157	-0.092	0.052	0.057	-0.108	-0.208	0.166	0.171	0.206	0.193	0.204	0.211	0.060	0.052	0.059	0.045	0.037

TABLE A.5.1 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SOPHOMORES

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN
37	MABSENT	-0.015	0.002	0.015	0.036	-0.079	-0.050	-0.011	-0.004	0.004	-0.018	0.011	-0.006	-0.013	-0.017	-0.025	0.061
38	MCUTCLS	0.089	0.117	0.140	-0.010	-0.019	-0.034	-0.026	-0.034	0.025	0.023	0.073	0.056	0.036	0.073	0.061	0.051
39	ACADEM	0.168	0.205	0.248	-0.105	0.134	0.070	-0.045	-0.046	0.117	0.127	0.154	0.149	0.143	0.303	0.303	-0.053
40	GENERAL	-0.050	-0.080	-0.089	0.006	-0.032	0.004	0.012	-0.005	-0.066	-0.012	-0.036	-0.015	-0.025	-0.103	-0.105	-0.001
41	VOCATNL	-0.118	-0.128	-0.169	0.097	-0.095	-0.059	0.034	0.054	-0.043	-0.093	-0.103	-0.114	-0.101	-0.187	-0.184	0.055
42	LGSIZE	0.088	0.094	0.137	-0.044	-0.050	-0.056	-0.008	-0.002	0.046	-0.015	0.032	-0.003	0.012	0.108	0.107	0.069
43	READBOTH	0.187	0.216	0.257	-0.143	0.171	0.116	-0.078	-0.113	0.118	0.202	0.189	0.230	0.233	0.241	0.242	-0.117
44	VOCBOTH	0.232	0.256	0.306	-0.168	0.179	0.116	-0.089	-0.103	0.120	0.191	0.207	0.240	0.237	0.246	0.239	-0.109
45	MATHBOTH	0.258	0.235	0.301	-0.148	0.222	0.160	-0.099	-0.136	0.100	0.206	0.232	0.242	0.256	0.291	0.285	-0.133

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F
37	0.010	0.025	-0.172	-0.134	0.341	0.047	-0.009	-0.006	-0.064	0.178	0.150	-0.134	-0.320	-0.106	-0.272	-0.245	-0.073	-0.157
38	-0.013	0.053	-0.251	-0.086	0.348	0.082	0.024	0.004	0.002	0.114	0.273	-0.044	-0.426	-0.016	-0.291	-0.601	-0.012	-0.092
39	-0.039	0.130	-0.061	-0.050	-0.006	0.057	0.265	0.231	0.275	-0.145	-0.098	0.058	0.048	0.034	0.035	-0.034	0.050	0.052
40	-0.072	-0.139	0.007	0.066	0.063	-0.023	-0.157	-0.129	-0.150	0.078	0.077	-0.046	-0.053	-0.033	-0.002	0.018	0.021	0.057
41	0.115	0.027	0.053	-0.022	-0.068	-0.023	-0.088	-0.084	-0.106	0.051	0.015	-0.004	0.018	0.005	-0.027	0.022	-0.070	-0.108
42	0.098	0.115	-0.084	-0.126	0.128	0.079	0.064	0.014	0.039	0.032	0.112	-0.037	-0.063	0.070	-0.362	-0.584	-0.153	-0.208
43	-0.215	0.043	-0.115	0.065	0.020	0.065	0.225	0.210	0.207	-0.129	-0.058	0.060	0.031	0.025	0.082	0.009	0.111	0.166
44	-0.224	0.082	-0.141	0.023	0.059	0.073	0.238	0.184	0.196	-0.120	-0.042	0.064	0.017	0.047	0.054	-0.035	0.121	0.171
45	-0.264	0.053	-0.166	0.097	0.033	0.092	0.234	0.308	0.250	-0.188	-0.080	0.073	0.023	0.029	0.080	-0.008	0.133	0.206

OBS	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YB072A	YB072B	BB068A	BB068B
37	1.000	0.538	-0.051	0.027	0.012	0.075	-0.053	-0.042	-0.067	-0.053	-0.045	-0.061	-0.021	-0.021	-0.019	-0.016	-0.015
38	0.538	1.000	0.002	0.030	-0.046	0.331	0.020	0.053	0.023	0.027	0.057	0.033	0.075	0.069	0.075	0.076	0.069
39	-0.051	0.002	1.000	-0.598	-0.344	0.088	0.298	0.313	0.355	0.332	0.340	0.372	0.408	0.249	0.285	0.317	0.333
40	0.027	0.030	-0.598	1.000	-0.493	-0.100	-0.096	-0.106	-0.112	-0.098	-0.095	-0.123	-0.191	-0.112	-0.128	-0.143	-0.154
41	0.012	-0.046	-0.344	-0.493	1.000	0.013	-0.195	-0.197	-0.232	-0.224	-0.234	-0.240	-0.206	-0.136	-0.158	-0.170	-0.171
42	0.075	0.331	0.088	-0.100	0.013	1.000	-0.012	0.041	0.010	-0.014	0.032	0.016	0.119	0.097	0.112	0.126	0.111
43	-0.053	0.020	0.298	-0.096	-0.195	-0.012	1.000	0.533	0.567	0.886	0.617	0.595	0.340	0.219	0.234	0.240	0.227
44	-0.042	0.053	0.313	-0.106	-0.197	0.041	0.533	1.000	0.517	0.607	0.872	0.545	0.338	0.244	0.258	0.254	0.239
45	-0.067	0.023	0.355	-0.112	-0.232	0.010	0.567	0.517	1.000	0.640	0.606	0.843	0.396	0.275	0.290	0.294	0.282

TABLE A.5.1 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SOPHOMORES

OBS	NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BR047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN
46	TOTREAD	0.226	0.243	0.294	-0.163	0.189	0.132	-0.088	-0.126	0.127	0.222	0.217	0.258	0.263	0.267	0.267	-0.137
47	TOTVOC	0.274	0.277	0.334	-0.200	0.214	0.146	-0.105	-0.136	0.128	0.227	0.246	0.280	0.283	0.277	0.270	-0.140
48	TOTMATH	0.270	0.259	0.324	-0.152	0.234	0.163	-0.109	-0.147	0.109	0.210	0.241	0.250	0.268	0.307	0.297	-0.140
49	EDPLANS	0.245	0.361	0.403	-0.139	0.166	0.061	-0.021	-0.026	0.174	0.152	0.188	0.200	0.176	0.468	0.496	-0.047
50	YB072A	0.200	0.259	0.306	-0.092	0.142	0.040	-0.016	-0.011	0.110	0.084	0.129	0.138	0.122	0.312	0.301	-0.045
51	YB072B	0.207	0.272	0.318	-0.098	0.142	0.043	-0.015	-0.019	0.133	0.103	0.142	0.148	0.134	0.359	0.360	-0.048
52	BB068A	0.200	0.277	0.313	-0.104	0.125	0.036	-0.008	-0.017	0.150	0.095	0.134	0.139	0.126	0.422	0.435	-0.031
53	BB068B	0.169	0.262	0.297	-0.080	0.101	0.036	-0.003	-0.007	0.159	0.102	0.135	0.145	0.118	0.476	0.519	-0.015

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	HMWRK	BB016	BB058E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E
46	-0.239	0.045	-0.132	0.068	0.035	0.069	0.250	0.234	0.217	-0.135	-0.052	0.068	0.026	0.030	0.081	0.005	0.122
47	-0.293	0.088	-0.179	0.050	0.066	0.090	0.252	0.199	0.217	-0.133	-0.043	0.069	0.016	0.043	0.059	-0.037	0.133
48	-0.273	0.066	-0.177	0.094	0.036	0.095	0.252	0.329	0.259	-0.191	-0.082	0.081	0.025	0.034	0.079	-0.014	0.143
49	0.018	0.028	-0.033	-0.030	0.046	0.027	0.260	0.241	0.338	-0.189	-0.113	0.093	0.033	0.082	0.039	-0.078	0.099
50	0.001	0.032	-0.023	-0.032	0.030	0.012	0.182	0.155	0.180	-0.072	-0.031	0.069	0.015	0.053	0.017	-0.070	0.065
51	0.004	0.029	-0.022	-0.043	0.045	0.014	0.196	0.173	0.224	-0.094	-0.050	0.071	0.012	0.059	0.017	-0.076	0.069
52	0.035	0.022	-0.019	-0.043	0.050	0.012	0.204	0.185	0.256	-0.119	-0.080	0.071	0.012	0.066	0.009	-0.084	0.062
53	0.061	0.013	-0.012	-0.049	0.058	0.024	0.197	0.172	0.272	-0.153	-0.114	0.071	0.009	0.064	0.018	-0.078	0.069

OBS	MYB019F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YB072A	YBQ72B	BB068A	BB068B
46	0.193	-0.053	0.027	0.332	-0.098	-0.224	-0.014	0.886	0.607	0.640	1.000	0.706	0.672	0.374	0.257	0.272	0.275	0.255
47	0.204	-0.045	0.057	0.340	-0.095	-0.234	0.032	0.617	0.872	0.606	0.706	1.000	0.633	0.374	0.265	0.281	0.277	0.261
48	0.211	-0.061	0.033	0.372	-0.123	-0.240	0.016	0.595	0.545	0.843	0.672	0.633	1.000	0.419	0.286	0.305	0.311	0.299
49	0.060	-0.021	0.075	0.408	-0.191	-0.206	0.119	0.340	0.338	0.386	0.374	0.374	0.419	1.000	0.358	0.422	0.511	0.599
50	0.052	-0.021	0.069	0.249	-0.112	-0.136	0.097	0.219	0.244	0.275	0.257	0.265	0.286	0.358	1.000	0.836	0.591	0.362
51	0.059	-0.019	0.075	0.285	-0.128	-0.158	0.112	0.234	0.258	0.290	0.272	0.281	0.305	0.422	0.836	1.000	0.712	0.445
52	0.045	-0.016	0.076	0.317	-0.143	-0.170	0.126	0.240	0.254	0.284	0.275	0.277	0.311	0.511	0.591	0.712	1.000	0.652
53	0.037	-0.015	0.069	0.333	-0.154	-0.171	0.111	0.227	0.239	0.282	0.255	0.261	0.299	0.599	0.362	0.445	0.652	1.000

TABLE A.5.2

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SOPHOMORES

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP
1	MEAN	4.887	5.207	5.913	2.811	7.585	0.851	1.889	1.599	2.301	0.864	0.801	0.856	0.814	0.726
2	STDEV	1.662	2.602	2.758	1.652	1.819	0.356	0.842	0.829	1.138	0.343	0.399	0.351	0.389	0.446
3	BB101	1.000	0.273	0.338	-0.042	0.314	0.206	-0.108	-0.078	0.067	0.082	0.126	0.101	0.124	0.265
4	BB042	0.273	1.000	0.538	-0.017	0.234	-0.034	0.051	0.072	0.038	0.071	0.151	0.147	0.074	0.199
5	BB039	0.338	0.538	1.000	-0.016	0.279	0.022	-0.117	-0.076	0.021	0.070	0.137	0.141	0.081	0.266
6	SIBS	-0.042	-0.017	-0.016	1.000	0.167	0.017	-0.103	-0.086	-0.135	-0.000	0.015	0.016	-0.069	-0.090
7	BB103	0.314	0.234	0.279	0.167	1.000	0.159	-0.156	-0.089	0.042	0.128	0.151	0.167	0.086	0.160
8	BOTHPAR	0.206	-0.034	0.022	0.017	0.159	1.000	-0.152	-0.114	0.017	0.047	0.066	0.052	0.053	0.225
9	BB037B	-0.108	0.051	-0.117	-0.103	-0.156	-0.152	1.000	0.545	0.012	-0.049	-0.057	-0.034	-0.033	-0.064
10	BB037C	-0.078	0.072	-0.076	-0.086	-0.089	-0.114	0.545	1.000	-0.003	-0.065	-0.050	-0.041	-0.024	-0.077
11	BB047G	0.067	0.038	0.021	-0.135	0.042	0.017	0.012	-0.003	1.000	0.109	0.055	0.085	0.055	0.123

OBS	MOTEXP	HISPAN	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	HMWRK	BB016	BB059E	MBB053E
1	0.778	0.064	0.045	0.329	0.254	0.266	0.151	0.619	0.217	0.270	5.721	1.913	0.168	2.984
2	0.415	0.245	0.207	0.470	0.435	0.442	0.358	0.486	0.412	0.444	3.773	1.090	0.374	0.337
3	0.181	-0.078	-0.081	-0.010	0.037	-0.069	0.054	-0.036	0.077	0.073	0.138	0.001	0.067	0.169
4	0.203	-0.054	0.023	-0.050	0.064	-0.112	0.129	-0.168	0.044	0.068	0.215	-0.060	0.069	0.284
5	0.200	-0.097	-0.072	-0.024	0.066	-0.113	0.094	-0.122	0.074	0.066	0.190	-0.065	0.065	0.231
6	-0.116	0.029	-0.028	-0.019	-0.073	0.134	-0.053	0.231	-0.010	-0.034	-0.106	-0.001	0.007	-0.118
7	0.115	-0.125	-0.083	-0.026	-0.000	0.056	-0.035	0.006	0.047	0.041	0.114	-0.039	0.057	0.146
8	0.085	-0.034	-0.119	0.015	0.016	0.002	-0.042	0.049	0.048	0.037	0.005	-0.058	-0.021	0.024
9	-0.011	0.048	0.192	-0.051	0.007	0.019	0.036	-0.055	-0.006	-0.033	-0.000	0.016	0.001	0.010
10	-0.029	0.043	0.215	-0.089	0.069	-0.035	0.078	-0.115	-0.027	-0.052	-0.021	0.045	0.038	0.002
11	0.114	-0.031	-0.002	0.002	0.016	0.008	-0.032	-0.032	0.111	0.081	0.175	-0.018	-0.127	0.078

OBS	MBB053F	MBB053G	MYBO19A	MYBO19B	MYBO19E	MYBO19F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH
1	2.873	2.415	2.298	2.146	2.444	2.935	2.005	0.228	0.597	0.336	0.057	6.185	0.650
2	0.290	0.317	0.296	0.415	0.296	0.077	0.308	0.137	0.491	0.472	0.231	0.962	0.477
3	0.020	0.096	0.145	-0.013	0.156	0.140	-0.074	0.156	0.163	-0.132	-0.076	-0.022	-0.037
4	0.008	0.214	0.151	-0.033	0.264	0.205	-0.036	0.216	0.213	-0.168	-0.099	-0.107	-0.169
5	0.009	0.159	0.137	-0.069	0.245	0.173	-0.013	0.235	0.233	-0.187	-0.105	-0.063	-0.146
6	0.078	-0.074	-0.130	-0.048	-0.142	-0.115	-0.005	-0.074	-0.088	0.075	0.029	0.150	0.163
7	0.057	0.134	0.054	-0.043	0.089	0.118	-0.052	0.087	0.114	-0.084	-0.083	0.023	-0.018
8	0.046	0.033	0.006	0.019	-0.041	0.028	-0.060	-0.034	0.005	0.008	-0.012	0.046	0.017
9	0.011	0.015	0.036	0.089	-0.020	-0.026	-0.022	-0.051	-0.016	0.017	-0.007	-0.017	0.013
10	-0.026	0.011	0.033	0.088	-0.016	-0.021	-0.006	-0.014	-0.034	0.010	0.046	-0.081	-0.023
11	0.023	0.049	0.056	-0.001	0.070	0.083	-0.052	-0.012	0.128	-0.095	-0.070	-0.002	-0.007

OBS	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YBO72A	YBO72B	BBO68A	BBO68B
1	0.348	0.003	4.336	4.655	11.132	10.513	12.975	21.832	2.809	0.555	0.606	0.711	0.759
2	0.476	0.051	1.961	1.892	3.767	3.716	4.108	6.857	0.977	0.497	0.489	0.453	0.427
3	0.033	0.045	0.092	0.184	0.164	0.122	0.183	0.150	0.231	0.200	0.203	0.206	0.169
4	0.164	0.051	0.202	0.226	0.179	0.202	0.241	0.187	0.303	0.256	0.254	0.226	0.199
5	0.141	0.052	0.189	0.282	0.234	0.241	0.280	0.253	0.342	0.278	0.297	0.256	0.219
6	-0.162	-0.017	-0.088	-0.109	-0.067	-0.085	-0.131	-0.057	-0.135	-0.076	-0.096	-0.100	-0.111
7	0.014	0.035	0.111	0.119	0.157	0.142	0.108	0.169	0.139	0.153	0.170	0.151	0.108
8	-0.017	-0.000	0.071	0.034	0.041	0.079	0.031	0.053	0.046	-0.023	0.009	0.033	0.039
9	-0.012	-0.012	-0.054	-0.067	-0.092	-0.070	-0.074	-0.093	0.001	-0.042	-0.037	-0.010	0.003
10	0.023	0.003	-0.093	-0.104	-0.153	-0.101	-0.110	-0.151	-0.016	-0.010	0.009	-0.000	0.009
11	0.005	0.015	0.091	0.057	0.052	0.102	0.088	0.037	0.143	0.077	0.105	0.111	0.132

TABLE A.5.2 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SOPHOMORES

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB101C	BB104D	BB104G	BB104I	FATEXP
12	BB104C	0.082	0.071	0.070	-0.000	0.128	0.047	-0.049	-0.065	0.109	1.000	0.433	0.541	0.417	0.103
13	BB104D	0.126	0.151	0.137	0.015	0.151	0.066	-0.057	-0.050	0.055	0.433	1.000	0.473	0.348	0.127
14	BB104G	0.101	0.147	0.141	0.016	0.167	0.052	-0.034	-0.041	0.085	0.541	0.473	1.000	0.465	0.143
15	BB104I	0.124	0.074	0.081	-0.069	0.086	0.053	-0.033	-0.024	0.055	0.417	0.348	0.465	1.000	0.110
16	FATEXP	0.265	0.199	0.266	-0.090	0.160	0.225	-0.064	-0.077	0.123	0.103	0.127	0.143	0.110	1.000
17	MOTEXP	0.181	0.203	0.200	-0.116	0.115	0.085	-0.011	-0.028	0.114	0.084	0.118	0.119	0.109	0.684
18	HISPAN	-0.078	-0.054	-0.097	0.029	-0.125	-0.034	0.048	0.043	-0.031	-0.058	-0.093	-0.077	-0.063	-0.003
19	BLACK	-0.081	0.023	-0.072	-0.028	-0.083	-0.119	0.192	0.215	-0.002	-0.060	-0.055	-0.062	-0.078	-0.028
20	REGION1	-0.010	-0.050	-0.024	-0.019	-0.026	0.015	-0.051	-0.089	0.002	0.095	0.072	0.080	0.094	-0.000
21	REGION2	0.037	0.064	0.066	-0.073	-0.000	0.016	0.007	0.069	0.016	-0.069	-0.105	-0.092	-0.059	0.037
22	REGION3	-0.069	-0.112	-0.113	0.134	0.056	0.002	0.019	-0.035	0.008	-0.040	0.009	-0.033	-0.042	-0.050

OBS	MOTEXP	HISPAN	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	HMWRK	BB016	BB059E	MBB053E
12	0.084	-0.058	-0.060	0.095	-0.069	-0.040	0.009	0.138	0.071	0.029	0.047	-0.059	0.017	0.013
13	0.118	-0.093	-0.055	0.072	-0.105	0.009	0.022	0.112	0.074	0.065	0.123	-0.060	0.024	0.078
14	0.119	-0.077	-0.062	0.080	-0.092	-0.033	0.047	0.116	0.083	0.057	0.099	-0.031	0.019	0.091
15	0.109	-0.063	-0.078	0.094	-0.059	-0.042	0.000	0.097	0.069	0.080	0.065	-0.059	0.009	0.041
16	0.684	-0.003	-0.028	-0.000	0.037	-0.050	0.017	0.016	0.108	0.112	0.159	-0.098	-0.007	0.153
17	1.000	-0.007	0.027	-0.021	0.054	-0.048	0.022	0.029	0.115	0.132	0.162	-0.117	-0.046	0.142
18	-0.007	1.000	-0.057	-0.095	0.023	-0.021	0.123	0.114	-0.040	-0.051	-0.042	0.033	0.042	-0.018
19	0.027	-0.057	1.000	0.004	-0.011	0.010	-0.005	-0.092	0.014	0.001	0.005	-0.019	-0.054	-0.014
20	-0.021	-0.095	0.004	1.000	-0.408	-0.422	-0.296	0.112	0.028	0.050	0.166	0.013	0.026	0.021
21	0.054	0.023	-0.011	-0.408	1.000	-0.351	-0.246	-0.231	-0.044	-0.036	-0.090	-0.004	-0.025	-0.054
22	-0.048	-0.021	0.010	-0.422	-0.351	1.000	-0.254	0.214	0.031	-0.005	-0.104	-0.043	-0.084	-0.134

OBS	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH
12	0.042	0.015	0.017	-0.016	0.063	0.090	-0.014	0.018	0.085	-0.033	-0.091	0.024	-0.006
13	0.055	0.073	0.075	0.005	0.101	0.097	-0.046	0.038	0.108	-0.067	-0.078	0.012	0.013
14	0.077	0.082	0.065	0.001	0.089	0.114	-0.021	0.046	0.138	-0.085	-0.084	0.010	-0.015
15	0.022	0.048	0.085	0.026	0.072	0.106	-0.050	0.010	0.095	-0.041	-0.090	-0.004	-0.022
16	0.082	0.112	0.185	0.061	0.112	0.121	-0.137	0.053	0.247	-0.171	-0.167	-0.008	0.018
17	0.082	0.130	0.227	0.086	0.125	0.145	-0.184	0.014	0.272	-0.167	-0.218	-0.009	0.064
18	0.059	-0.028	0.012	0.030	-0.038	-0.114	0.011	0.022	-0.009	0.009	0.002	0.002	0.057
19	-0.047	-0.008	0.032	0.081	-0.092	-0.035	-0.000	-0.066	0.005	-0.012	0.011	0.003	0.084
20	0.141	-0.033	-0.122	-0.214	-0.175	-0.000	0.071	-0.036	0.047	-0.059	0.051	0.280	0.046
21	-0.244	-0.048	0.131	0.056	0.082	0.034	-0.128	0.045	0.041	-0.020	-0.059	-0.281	-0.200
22	0.128	-0.070	-0.058	0.143	-0.196	-0.021	-0.132	-0.261	-0.108	0.097	0.017	0.231	0.293

OBS	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YB072A	YB072B	BB068A	BB068B
12	0.005	0.012	0.103	0.134	0.092	0.120	0.166	0.095	0.101	0.047	0.066	0.088	0.086
13	-0.015	0.014	0.144	0.197	0.156	0.151	0.209	0.155	0.148	0.119	0.121	0.140	0.125
14	0.014	0.017	0.170	0.217	0.179	0.215	0.255	0.179	0.159	0.132	0.146	0.112	0.135
15	0.021	0.016	0.163	0.172	0.146	0.165	0.210	0.157	0.148	0.096	0.130	0.129	0.129
16	-0.020	0.023	0.183	0.195	0.224	0.199	0.215	0.227	0.411	0.254	0.297	0.358	0.393
17	-0.067	0.024	0.201	0.197	0.242	0.216	0.240	0.228	0.426	0.241	0.291	0.368	0.422
18	-0.056	-0.011	-0.074	-0.084	-0.102	-0.095	-0.114	-0.114	-0.027	-0.029	-0.030	-0.042	-0.022
19	-0.084	0.002	-0.036	-0.101	-0.100	-0.049	-0.098	-0.111	0.070	0.020	0.023	0.033	0.060
20	-0.044	-0.017	0.066	0.082	0.062	0.087	0.081	0.074	0.058	0.043	0.048	0.037	0.004
21	0.197	0.024	-0.022	-0.064	-0.013	-0.033	-0.057	-0.036	0.010	0.030	0.026	0.029	0.025
22	-0.295	0.013	-0.044	-0.075	-0.068	-0.058	-0.082	-0.059	-0.110	-0.094	-0.096	-0.073	-0.067

TABLE A.5.2 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SOPHOMORES

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP
23	REGION4	0.054	0.129	0.094	-0.053	-0.035	-0.042	0.036	0.078	-0.032	0.009	0.022	0.047	0.000	0.017
24	RELCATH	-0.036	-0.168	-0.122	0.231	0.006	0.049	-0.055	-0.115	-0.032	0.138	0.112	0.116	0.097	0.016
25	BB011C	0.077	0.044	0.074	-0.010	0.047	0.048	-0.006	-0.027	0.111	0.071	0.074	0.083	0.069	0.108
26	BB011D	0.073	0.058	0.066	-0.034	0.041	0.037	-0.033	-0.052	0.081	0.029	0.065	0.057	0.080	0.112
27	HMWRK	0.138	0.215	0.190	-0.106	0.114	0.005	-0.000	-0.021	0.175	0.047	0.123	0.099	0.065	0.159
28	BB016	0.001	-0.060	-0.065	-0.001	-0.039	-0.058	0.016	0.045	-0.018	-0.059	-0.060	-0.031	-0.059	-0.098
29	BB059E	0.067	0.069	0.065	0.007	0.057	-0.021	0.001	0.038	-0.127	0.017	0.024	0.019	0.009	-0.007
30	MBB053E	0.169	0.284	0.231	-0.118	0.146	0.024	0.010	0.002	0.078	0.013	0.078	0.091	0.041	0.153
31	MBB053F	0.020	0.008	0.009	0.078	0.057	0.046	0.011	-0.026	0.023	0.042	0.055	0.077	0.022	0.082
32	MBB053G	0.096	0.214	0.159	-0.074	0.134	0.033	0.015	0.011	0.049	0.015	0.073	0.082	0.048	0.112
33	MYBO19A	0.145	0.151	0.137	-0.130	0.054	0.006	0.036	0.033	0.056	0.017	0.075	0.065	0.085	0.185

OBS	MOTEXP	HISPAN	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	HMWRK	BB016	BB059E	MBB053E
23	0.022	0.123	-0.005	-0.286	-0.246	-0.254	1.000	-0.130	-0.022	-0.016	0.020	0.041	0.099	0.203
24	0.029	0.114	-0.092	0.112	-0.231	0.214	-0.130	1.000	0.068	0.051	-0.029	-0.125	-0.105	-0.200
25	0.115	-0.040	0.014	0.028	-0.044	0.031	-0.022	0.068	1.000	0.492	0.150	-0.043	-0.007	-0.029
26	0.132	-0.051	0.001	0.050	-0.036	-0.005	-0.016	0.051	0.492	1.000	0.147	-0.090	-0.062	0.044
27	0.162	-0.042	0.005	0.166	-0.090	-0.104	0.020	-0.029	0.150	0.147	1.000	-0.137	-0.103	0.286
28	-0.117	0.033	-0.019	0.013	-0.004	-0.043	0.041	-0.125	-0.043	-0.090	-0.137	1.000	0.187	-0.078
29	-0.046	0.042	-0.054	0.026	-0.025	-0.084	0.098	-0.105	-0.007	-0.062	-0.103	0.187	1.000	0.049
30	0.142	-0.018	-0.014	0.021	-0.054	-0.134	0.203	-0.200	-0.029	0.044	0.286	-0.078	0.019	1.000
31	0.082	0.059	-0.047	0.141	-0.244	0.128	-0.047	0.356	-0.007	0.029	0.092	-0.153	-0.115	0.278
32	0.130	-0.028	-0.008	-0.033	-0.048	-0.070	0.187	-0.036	-0.031	0.022	0.180	-0.110	-0.021	0.752
33	0.227	0.012	0.032	-0.122	0.131	-0.058	0.073	-0.031	-0.030	0.065	0.166	-0.158	-0.106	0.470

OBS	MBB053F	MBB053G	MYBO19A	MYBO19B	MYBO19E	MYBO19F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH
23	-0.047	0.187	0.073	0.038	0.373	-0.016	0.225	0.317	0.022	-0.018	-0.016	-0.308	-0.179
24	0.356	-0.036	-0.031	0.091	-0.322	-0.162	-0.255	-0.343	0.017	-0.028	0.042	0.468	0.692
25	-0.007	-0.031	-0.030	-0.050	-0.011	-0.036	0.043	0.042	0.165	-0.150	-0.034	0.073	0.067
26	0.029	0.022	0.065	0.026	-0.010	-0.011	-0.052	-0.027	0.153	-0.128	-0.054	0.056	0.079
27	0.092	0.180	0.166	-0.029	0.211	0.183	-0.074	0.088	0.299	-0.262	-0.091	0.044	-0.057
28	-0.153	-0.110	-0.158	-0.103	-0.026	-0.074	0.200	0.107	-0.138	0.119	0.019	-0.073	-0.149
29	-0.115	-0.021	-0.106	-0.209	0.079	-0.045	0.212	0.279	-0.026	0.023	0.012	-0.071	-0.210
30	0.278	0.752	0.470	0.239	0.421	0.222	-0.219	0.176	0.293	-0.250	-0.112	-0.235	-0.198
31	1.000	0.396	0.162	0.263	-0.102	0.006	-0.457	-0.344	0.149	-0.124	-0.050	0.468	0.448
32	0.396	1.000	0.454	0.375	0.311	0.206	-0.324	-0.063	0.199	-0.149	-0.109	-0.157	0.064
33	0.162	0.454	1.000	0.629	0.408	0.288	-0.526	-0.149	0.238	-0.162	-0.166	-0.374	0.123

OBS	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YBO72A	YBO72B	BB068A	BB068B
23	0.182	-0.022	-0.005	0.066	0.021	-0.002	0.068	0.021	0.048	0.022	0.025	0.006	0.017
24	-0.689	-0.044	0.025	0.015	0.014	0.034	0.021	0.005	-0.011	-0.065	-0.040	-0.023	0.001
25	-0.067	0.006	0.248	0.236	0.252	0.276	0.276	0.254	0.209	0.099	0.141	0.125	0.121
26	-0.081	0.020	0.298	0.243	0.387	0.341	0.265	0.404	0.226	0.088	0.113	0.127	0.124
27	0.052	0.047	0.191	0.202	0.247	0.195	0.216	0.268	0.336	0.166	0.213	0.239	0.259
28	0.150	-0.011	-0.158	-0.125	-0.151	-0.169	-0.155	-0.164	-0.158	-0.049	-0.045	-0.088	-0.124
29	0.210	0.002	-0.064	-0.014	-0.041	-0.052	-0.048	-0.034	-0.097	0.010	0.005	-0.062	-0.104
30	0.190	0.079	0.177	0.231	0.196	0.187	0.229	0.223	0.203	0.164	0.192	0.150	0.139
31	-0.452	0.026	0.080	0.081	0.066	0.088	0.078	0.076	0.074	0.018	0.040	0.029	0.039
32	-0.070	0.054	0.120	0.130	0.130	0.126	0.147	0.145	0.145	0.124	0.153	0.130	0.118
33	-0.130	0.064	0.146	0.189	0.184	0.150	0.221	0.169	0.237	0.133	0.149	0.173	0.194

TABLE A.5.2 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SOPHOMORES

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP
34	MYBO19B	-0.013	-0.033	-0.069	-0.048	-0.043	0.019	0.089	0.088	-0.001	-0.016	0.005	0.001	0.026	0.061
35	MYBO19E	0.156	0.264	0.245	-0.142	0.089	-0.041	-0.020	-0.016	0.070	0.063	0.101	0.089	0.072	0.112
36	MYBO19F	0.140	0.205	0.173	-0.115	0.118	0.028	-0.026	-0.021	0.083	0.090	0.097	0.114	0.106	0.121
37	MABSENT	-0.074	-0.036	-0.013	-0.005	-0.052	-0.060	-0.022	-0.006	-0.052	-0.014	-0.046	-0.021	-0.050	-0.137
38	MCUTCLS	0.156	0.216	0.235	-0.074	0.087	-0.034	-0.051	-0.014	-0.012	0.018	0.038	0.046	0.010	0.053
39	ACADEM	0.163	0.213	0.233	-0.088	0.114	0,005	-0.016	-0.034	0.128	0.085	0.108	0.138	0.095	0.247
40	GENERAL	-0.132	-0.168	-0.187	0.075	-0.084	0.008	0.017	0.010	-0.095	-0.033	-0.067	-0.085	-0.041	-0.171
41	VOCATNL	-0.076	-0.099	-0.105	0.029	-0.083	-0.012	-0.007	0.046	-0.070	-0.081	-0.078	-0.084	-0.090	-0.167
42	LGSIZE	-0.022	-0.107	-0.063	0.150	0.023	0.046	-0.017	-0.081	-0.002	0.024	0.012	0.010	-0.004	-0.008
43	SCHCATH	-0.037	-0.169	-0.146	0.163	-0.018	0.017	0.013	-0.023	-0.007	-0.006	0.013	-0.015	-0.022	0.018
44	SCHOPRIV	0.033	0.164	0.141	-0.162	0.014	-0.017	-0.012	0.023	0.005	0.005	-0.015	0.014	0.021	-0.020

OBS	MOTEXP	HISPAN	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	HMWRK	BB016	BB059E	MBB053E
34	0.086	0.030	0.081	-0.214	0.056	0.143	0.038	0.091	-0.050	0.026	-0.029	-0.103	-0.209	0.239
35	0.125	-0.038	-0.092	-0.175	0.082	-0.196	0.373	-0.322	-0.011	-0.010	0.211	-0.026	0.079	0.421
36	0.145	-0.114	-0.035	-0.000	0.034	-0.021	-0.016	-0.162	-0.036	-0.011	0.183	-0.074	-0.045	0.222
37	-0.184	0.011	-0.000	0.071	-0.128	-0.132	0.225	-0.255	0.043	-0.052	-0.074	0.200	0.212	-0.219
38	0.014	0.022	-0.066	-0.036	0.045	-0.261	0.317	-0.343	0.042	-0.027	0.088	0.107	0.279	0.176
39	0.272	-0.009	0.005	0.047	0.041	-0.108	0.022	0.017	0.165	0.153	0.299	-0.138	-0.026	0.293
40	-0.167	0.009	-0.012	-0.059	-0.020	0.097	-0.018	-0.028	-0.150	-0.128	-0.262	0.119	0.023	-0.250
41	-0.218	0.002	0.011	0.051	-0.059	0.017	-0.016	0.042	-0.034	-0.054	-0.091	0.019	0.012	-0.112
42	-0.009	0.002	0.003	0.280	-0.281	0.231	-0.308	0.468	0.073	0.056	0.044	-0.073	-0.071	-0.235
43	0.064	0.057	0.084	0.046	-0.200	0.283	-0.178	0.692	0.067	0.079	-0.057	-0.149	-0.210	-0.198
44	-0.067	-0.056	-0.084	-0.044	0.197	-0.295	0.182	-0.689	-0.067	-0.081	0.052	0.150	0.210	0.190

OBS	MBB053F	MBB053G	MYBO19A	MYBO19B	MYBO19E	MYBO19F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH
34	0.263	0.375	0.629	1.000	0.144	0.084	-0.453	-0.580	0.057	-0.011	-0.103	-0.291	0.281
35	-0.102	0.311	0.408	0.144	1.000	0.430	-0.021	0.267	0.223	-0.171	-0.114	-0.582	-0.306
36	0.006	0.206	0.288	0.084	0.430	1.000	-0.200	0.006	0.184	-0.134	-0.104	-0.189	-0.075
37	-0.457	-0.324	-0.526	-0.453	-0.021	-0.200	1.000	0.495	-0.144	0.103	0.079	-0.205	-0.445
38	-0.344	-0.063	-0.149	-0.580	0.267	0.006	0.495	1.000	0.129	-0.123	-0.020	-0.190	-0.515
39	0.149	0.199	0.238	0.057	0.223	0.184	-0.144	0.129	1.000	-0.866	-0.298	-0.004	0.041
40	-0.124	-0.149	-0.162	-0.011	-0.171	-0.134	0.103	-0.123	-0.866	1.000	-0.175	-0.032	-0.045
41	-0.050	-0.108	-0.166	-0.103	-0.114	-0.104	0.079	-0.020	-0.298	-0.175	1.000	0.088	0.007
42	0.468	-0.157	-0.374	-0.291	-0.582	-0.189	-0.205	-0.180	-0.004	-0.032	0.088	1.000	0.462
43	0.448	0.064	0.123	0.281	-0.306	-0.075	-0.445	-0.515	0.041	-0.045	0.007	0.462	1.000
44	-0.452	-0.070	-0.130	-0.284	0.303	0.076	0.449	0.516	-0.045	0.049	-0.006	-0.460	-0.994

OBS	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YBO72A	YBO72B	BBO68A	BBO68B
34	-0.284	0.026	0.022	-0.019	-0.009	0.005	0.002	-0.017	0.077	-0.005	-0.000	0.022	0.068
35	0.303	0.042	0.119	0.227	0.141	0.117	0.218	0.135	0.171	0.155	0.162	0.144	0.154
36	0.076	-0.005	0.151	0.179	0.144	0.154	0.176	0.158	0.144	0.141	0.159	0.170	0.158
37	0.449	-0.024	-0.125	-0.098	-0.153	-0.123	-0.115	-0.140	-0.152	-0.041	-0.079	-0.106	-0.135
38	0.515	0.014	0.026	0.116	0.069	0.059	0.116	0.079	0.051	0.097	0.081	0.050	0.031
39	-0.045	0.038	0.246	0.292	0.289	0.269	0.328	0.300	0.364	0.243	0.272	0.299	0.295
40	0.049	-0.033	-0.182	-0.228	-0.206	-0.203	-0.235	-0.226	-0.279	-0.184	-0.198	-0.213	-0.216
41	-0.006	-0.013	-0.128	-0.133	-0.155	-0.122	-0.180	-0.137	-0.193	-0.122	-0.153	-0.178	-0.171
42	-0.460	-0.023	-0.003	-0.035	-0.007	0.017	-0.031	0.006	-0.012	-0.020	-0.004	-0.011	-0.034
43	-0.994	-0.070	-0.000	-0.052	-0.033	-0.008	-0.032	-0.061	0.030	-0.050	-0.011	0.030	0.054
44	1.000	-0.037	-0.004	0.046	0.027	0.002	0.026	0.055	-0.035	0.046	0.007	-0.033	-0.057

TABLE A.5.2 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SOPHOMORES

OBS	NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN	BLACK
45	SCHELITE	0.045	0.051	0.052	-0.017	0.035	-0.000	-0.012	0.003	0.015	0.012	0.014	0.017	0.016	0.023	0.024	-0.011	0.002
46	READBOTH	0.092	0.202	0.189	-0.088	0.111	0.071	-0.054	-0.093	0.091	0.103	0.144	0.170	0.163	0.183	0.201	-0.074	-0.036
47	VOCBOTH	0.184	0.226	0.282	-0.109	0.119	0.034	-0.067	-0.104	0.057	0.134	0.197	0.217	0.172	0.195	0.197	-0.084	-0.101
48	MATHBOTH	0.164	0.179	0.234	-0.067	0.157	0.041	-0.092	-0.153	0.052	0.092	0.156	0.179	0.146	0.224	0.242	-0.102	-0.100
49	TOTREAD	0.122	0.202	0.241	-0.085	0.142	0.079	-0.070	-0.101	0.102	0.120	0.151	0.215	0.165	0.199	0.216	-0.095	-0.049
50	TOTVOC	0.183	0.241	0.280	-0.131	0.108	0.031	-0.074	-0.110	0.088	0.166	0.209	0.255	0.210	0.215	0.240	-0.114	-0.098
51	TOTMATH	0.150	0.187	0.253	-0.057	0.169	0.053	-0.093	-0.151	0.037	0.095	0.155	0.179	0.157	0.227	0.228	-0.114	-0.111
52	EDPLANS	0.231	0.303	0.342	-0.135	0.139	0.046	0.001	-0.016	0.143	0.101	0.148	0.159	0.148	0.411	0.426	-0.027	0.070
53	YB072A	0.200	0.256	0.278	-0.076	0.153	-0.023	-0.042	-0.010	0.077	0.047	0.119	0.132	0.096	0.254	0.241	-0.029	0.020

OBS	REGION1	REGION2	REGION3	REGION4	RELCATH	BB101C	BB101D	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F	MABSENT
45	-0.017	0.024	0.013	-0.022	-0.044	0.006	0.020	0.047	-0.011	0.002	0.078	0.026	0.054	0.064	0.026	0.042	-0.005	-0.024
46	0.066	-0.022	-0.044	-0.005	0.025	0.248	0.298	0.191	-0.158	-0.064	0.177	0.080	0.120	0.146	0.022	0.119	0.151	-0.125
47	0.082	-0.064	-0.075	0.066	0.015	0.236	0.243	0.202	-0.125	-0.014	0.231	0.081	0.130	0.189	-0.019	0.227	0.179	-0.098
48	0.062	-0.013	-0.068	0.021	0.014	0.252	0.387	0.247	-0.151	-0.041	0.196	0.066	0.130	0.184	-0.009	0.141	0.144	-0.153
49	0.087	-0.033	-0.058	-0.002	0.034	0.276	0.341	0.195	-0.159	-0.052	0.187	0.088	0.126	0.150	0.005	0.117	0.154	-0.123
50	0.081	-0.057	-0.082	0.068	0.021	0.276	0.265	0.216	-0.155	-0.048	0.229	0.078	0.147	0.221	0.002	0.218	0.176	-0.115
51	0.074	-0.036	-0.059	0.021	0.005	0.254	0.404	0.268	-0.164	-0.034	0.223	0.076	0.145	0.169	-0.017	0.135	0.158	-0.140
52	0.058	0.010	-0.110	0.048	-0.011	0.209	0.226	0.336	-0.158	-0.097	0.203	0.074	0.145	0.237	0.077	0.171	0.144	-0.152
53	0.043	0.030	-0.094	0.022	-0.065	0.099	0.088	0.166	-0.049	0.010	0.164	0.018	0.124	0.133	-0.005	0.155	0.141	-0.041

OBS	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YB072A	YB072B	BB068A	BB068B
45	0.014	0.038	-0.033	-0.013	-0.023	-0.070	-0.037	1.000	0.044	0.053	0.053	0.054	0.056	0.061	0.043	0.034	0.034	0.028	0.025
46	0.026	0.246	-0.182	-0.128	-0.003	-0.000	-0.004	0.044	1.000	0.533	0.548	0.877	0.605	0.577	0.334	0.200	0.222	0.235	0.217
47	0.116	0.292	-0.228	-0.133	-0.035	-0.052	0.046	0.053	0.533	1.000	0.483	0.612	0.882	0.515	0.335	0.236	0.252	0.271	0.273
48	0.069	0.289	-0.206	-0.155	-0.007	-0.033	0.027	0.053	0.548	0.483	1.000	0.620	0.559	0.937	0.355	0.255	0.275	0.273	0.256
49	0.059	0.269	-0.203	-0.122	0.017	-0.008	0.002	0.054	0.877	0.612	0.620	1.000	0.697	0.650	0.367	0.226	0.242	0.250	0.243
50	0.116	0.328	-0.235	-0.180	-0.031	-0.032	0.026	0.056	0.605	0.882	0.559	0.697	1.000	0.585	0.381	0.251	0.278	0.297	0.296
51	0.079	0.300	-0.226	-0.137	0.006	-0.061	0.055	0.061	0.577	0.515	0.937	0.650	0.585	1.000	0.368	0.256	0.275	0.275	0.253
52	0.051	0.364	-0.279	-0.193	-0.012	0.030	-0.035	0.043	0.334	0.335	0.355	0.367	0.381	0.368	1.000	0.332	0.404	0.478	0.564
53	0.097	0.243	-0.184	-0.122	-0.020	-0.050	0.046	0.034	0.200	0.236	0.255	0.226	0.251	0.256	0.332	1.000	0.834	0.564	0.325

TABLE A.5.2 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SOPHOMORES

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN	BLACK	REGION1
54	YB072B	0.203	0.254	0.287	-0.096	0.170	0.009	-0.037	0.009	0.105	0.066	0.121	0.146	0.130	0.297	0.291	-0.030	0.023	0.048
55	BB068A	0.206	0.226	0.256	-0.100	0.151	0.033	-0.010	-0.000	0.111	0.088	0.140	0.112	0.129	0.358	0.368	-0.042	0.033	0.037
56	BB068B	0.169	0.199	0.219	-0.111	0.108	0.039	0.003	0.009	0.132	0.086	0.125	0.135	0.129	0.393	0.422	-0.022	0.060	0.004

OBS	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F	MABSENT	MCUTCLS
54	0.026	-0.096	0.025	-0.040	0.141	0.113	0.213	-0.045	0.005	0.192	0.040	0.153	0.149	-0.000	0.162	0.159	-0.079	0.081
55	0.029	-0.073	0.006	-0.023	0.125	0.127	0.239	-0.088	-0.062	0.150	0.029	0.130	0.173	0.022	0.144	0.170	-0.106	0.050
56	0.025	-0.067	0.047	0.001	0.121	0.124	0.259	-0.124	-0.104	0.139	0.039	0.118	0.194	0.068	0.154	0.158	-0.135	0.031

OBS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	YB072A	YB072B	BB068A	BB068B
54	0.272	-0.198	-0.153	-0.004	-0.011	0.007	0.034	0.222	0.252	0.275	0.242	0.278	0.275	0.404	0.834	1.000	0.681	0.405
55	0.299	-0.213	-0.178	-0.011	0.030	-0.033	0.028	0.235	0.271	0.273	0.250	0.297	0.275	0.478	0.564	0.681	1.000	0.630
56	0.295	-0.216	-0.171	-0.034	0.054	-0.057	0.028	0.217	0.273	0.256	0.243	0.296	0.253	0.564	0.325	0.405	0.630	1.000

TABLE A.5.3

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SENIORS.

OBS	NAME	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN
1	MEAN	4.265	4.176	4.652	3.065	6.848	0.778	1.828	1.673	2.385	0.816	0.704	0.785	0.769	0.537	0.618	0.062
2	STDEV	1.770	2.184	2.591	2.033	1.872	0.415	0.883	0.868	1.122	0.388	0.457	0.411	0.421	0.499	0.486	0.240
3	BB101	1.000	0.284	0.379	-0.138	0.345	0.306	-0.109	-0.124	0.092	0.145	0.195	0.183	0.208	0.283	0.182	-0.100
4	BB042	0.284	1.000	0.528	-0.116	0.210	0.006	0.053	0.031	0.095	0.091	0.163	0.159	0.110	0.248	0.252	-0.098
5	BB039	0.379	0.528	1.000	-0.137	0.257	0.025	-0.098	-0.094	0.118	0.093	0.175	0.183	0.141	0.338	0.280	-0.100
6	SIBS	-0.138	-0.116	-0.137	1.000	0.048	-0.049	-0.037	-0.017	-0.082	-0.034	-0.087	-0.048	-0.133	-0.130	-0.102	0.064
7	BB103	0.345	0.210	0.257	0.048	1.000	0.214	-0.121	-0.115	0.071	0.173	0.188	0.205	0.154	0.162	0.108	-0.124
8	BOTHPAR	0.306	0.006	0.025	-0.049	0.214	1.000	-0.150	-0.152	0.043	0.146	0.169	0.135	0.160	0.205	0.075	-0.031
9	BB037B	-0.109	0.053	-0.098	-0.037	-0.121	-0.150	1.000	0.614	-0.033	-0.038	-0.083	-0.059	-0.064	-0.061	0.002	0.010

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	ADVMTH	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYBO19A	MYBO19B	MYBO19E
1	0.120	0.216	0.311	0.289	0.184	0.283	0.256	0.217	2.049	3.523	2.532	0.447	2.492	2.347	2.216	1.632	1.450	1.943
2	0.325	0.412	0.463	0.453	0.388	0.450	0.437	0.412	1.538	3.246	1.340	0.497	0.217	0.228	0.216	0.207	0.291	0.247
3	-0.234	0.038	-0.144	0.074	0.046	0.062	0.108	0.089	0.249	0.077	0.008	0.098	0.070	0.016	0.030	0.033	-0.090	0.105
4	-0.043	0.013	-0.071	-0.006	0.078	-0.046	0.149	0.114	0.281	0.148	-0.022	0.036	0.083	0.005	0.063	0.039	-0.083	0.122
5	-0.105	0.034	-0.072	-0.034	0.090	-0.014	0.157	0.126	0.346	0.186	-0.033	0.043	0.116	0.011	0.088	0.022	-0.141	0.136
6	0.149	-0.022	-0.011	0.027	0.006	0.122	-0.050	-0.037	-0.137	-0.038	0.046	-0.000	-0.007	-0.013	-0.011	0.002	0.026	-0.025
7	-0.111	0.087	-0.115	0.131	-0.109	0.056	0.081	0.074	0.171	0.078	-0.025	0.030	0.052	0.043	-0.018	0.068	0.011	0.060
8	-0.212	0.013	-0.074	0.072	-0.008	0.056	0.033	0.048	0.109	0.034	-0.082	-0.017	0.013	0.025	-0.009	0.031	0.032	0.031
9	0.200	-0.047	0.104	-0.048	-0.018	-0.080	-0.010	-0.021	-0.075	-0.017	0.038	0.021	-0.017	0.001	0.006	-0.005	0.015	-0.044

OBS	MYBO19F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BB068A	BB068B	EB068C	EB068D
1	2.757	2.390	0.366	0.339	0.383	0.261	7.010	4.476	4.483	10.634	10.752	12.855	19.006	2.410	0.468	0.506	0.559	0.616
2	0.174	0.326	0.153	0.473	0.486	0.439	0.740	2.097	1.867	4.242	4.224	5.289	6.255	1.020	0.499	0.500	0.497	0.486
3	0.137	-0.019	0.100	0.173	-0.054	-0.120	0.104	0.194	0.243	0.257	0.217	0.228	0.263	0.227	0.196	0.189	0.174	0.150
4	0.102	0.011	0.112	0.234	-0.073	-0.169	0.089	0.199	0.253	0.242	0.230	0.262	0.253	0.341	0.290	0.279	0.266	0.239
5	0.127	-0.000	0.146	0.272	-0.088	-0.198	0.168	0.245	0.300	0.305	0.272	0.307	0.316	0.397	0.321	0.315	0.299	0.277
6	-0.046	0.018	-0.031	-0.118	0.052	0.064	-0.057	-0.130	-0.164	-0.122	-0.144	-0.169	-0.118	-0.125	-0.113	-0.112	0.107	-0.096
7	0.102	-0.074	-0.015	0.120	-0.048	-0.073	-0.029	0.149	0.162	0.184	0.161	0.160	0.190	0.158	0.143	0.136	0.123	0.106
8	0.110	-0.050	-0.021	0.076	-0.021	-0.043	-0.035	0.119	0.107	0.142	0.124	0.104	0.141	0.047	0.029	0.028	0.034	0.030
9	-0.070	-0.006	-0.030	-0.044	0.032	0.006	-0.013	-0.096	-0.093	-0.109	-0.096	-0.098	-0.115	-0.015	-0.005	-0.005	0.004	0.009

TABLE A.5.3 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SENIORS

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN
10	BB037C	-0.124	0.031	-0.094	-0.017	-0.115	-0.152	0.614	1.000	-0.049	-0.055	-0.096	-0.071	-0.080	-0.083	-0.014	0.014
11	BB047G	0.092	0.095	0.118	-0.092	0.071	0.043	-0.033	-0.049	1.000	0.071	0.082	0.096	0.092	0.148	0.155	-0.022
12	BB104C	0.145	0.091	0.093	-0.034	0.173	0.146	-0.038	-0.055	0.071	1.000	0.413	0.508	0.409	0.155	0.143	-0.066
13	BB104D	0.195	0.163	0.175	-0.087	0.188	0.169	-0.083	-0.096	0.082	0.413	1.000	0.396	0.403	0.184	0.163	-0.053
14	BB104G	0.183	0.159	0.183	-0.048	0.205	0.135	-0.059	-0.071	0.096	0.508	0.396	1.000	0.429	0.177	0.171	-0.100
15	BB104I	0.208	0.110	0.141	-0.133	0.154	0.160	-0.064	-0.080	0.092	0.409	0.403	0.429	1.000	0.189	0.173	-0.080
16	FATEXP	0.283	0.248	0.338	-0.130	0.162	0.205	-0.061	-0.083	0.148	0.155	0.184	0.177	0.189	1.000	0.695	-0.031
17	MOTEXP	0.182	0.252	0.280	-0.102	0.108	0.075	0.002	-0.014	0.155	0.143	0.163	0.171	0.173	0.695	1.000	-0.026
18	HISPAN	-0.100	-0.098	-0.100	0.064	-0.124	-0.034	0.010	0.014	-0.022	-0.066	-0.053	-0.100	-0.080	-0.031	-0.026	1.000

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	ADVMTH	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E
10	0.241	-0.057	0.144	-0.077	-0.021	-0.110	-0.021	-0.029	-0.101	-0.023	0.037	0.004	-0.017	0.008	0.008	-0.012	0.024	-0.051
11	-0.059	-0.001	-0.031	0.006	0.031	0.004	0.114	0.057	0.126	0.171	-0.034	-0.054	0.033	0.016	0.032	0.012	-0.015	0.037
12	-0.092	0.040	-0.033	0.008	-0.013	0.083	0.073	0.050	0.165	0.073	-0.046	0.043	0.026	0.030	0.001	0.028	0.009	0.035
13	-0.156	0.073	-0.133	0.038	0.036	0.102	0.100	0.087	0.215	0.109	-0.073	0.027	0.024	-0.004	-0.004	0.009	-0.041	0.050
14	-0.130	0.053	-0.095	0.022	0.032	0.060	0.102	0.065	0.206	0.110	-0.047	0.054	0.031	0.010	0.012	0.035	-0.019	0.061
15	-0.198	0.044	-0.105	0.051	0.019	0.089	0.102	0.095	0.241	0.110	-0.064	0.032	0.022	0.014	-0.003	0.037	0.001	0.063
16	-0.071	0.026	-0.032	-0.032	0.048	0.037	0.198	0.172	0.414	0.229	-0.105	-0.017	0.058	-0.001	0.052	0.013	-0.086	0.065
17	0.008	0.032	-0.008	-0.053	0.038	0.025	0.205	0.168	0.410	0.239	-0.108	-0.016	0.052	-0.008	0.049	0.009	-0.086	0.018
18	-0.095	-0.049	0.048	-0.089	0.099	0.171	-0.021	-0.030	-0.091	-0.038	0.022	0.001	0.010	-0.019	0.029	-0.054	-0.029	-0.019

OBS	MYB019F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BBO68A	EBO68B	EBO68C	EBO68D
10	-0.095	0.003	-0.039	-0.050	0.028	0.017	-0.022	-0.127	-0.132	-0.146	-0.132	-0.132	-0.150	-0.027	-0.025	-0.016	-0.010	-0.005
11	0.034	-0.004	0.023	0.135	-0.081	-0.056	0.025	0.126	0.130	0.107	0.134	0.127	0.107	0.169	0.136	0.147	0.151	0.155
12	0.079	-0.043	0.005	0.115	-0.033	-0.068	0.005	0.159	0.172	0.169	0.188	0.164	0.171	0.126	0.094	0.094	0.105	0.098
13	0.078	-0.003	0.060	0.158	-0.063	-0.082	0.055	0.180	0.215	0.220	0.199	0.208	0.224	0.173	0.135	0.138	0.135	0.126
14	0.095	-0.018	0.049	0.159	-0.044	-0.105	0.023	0.220	0.235	0.228	0.254	0.234	0.229	0.184	0.149	0.156	0.151	0.142
15	0.109	-0.041	0.025	0.163	-0.053	-0.097	0.007	0.227	0.244	0.265	0.258	0.239	0.272	0.182	0.137	0.143	0.151	0.142
16	0.060	-0.013	0.088	0.350	-0.122	-0.228	0.105	0.266	0.288	0.335	0.300	0.285	0.347	0.503	0.372	0.402	0.457	0.486
17	0.022	-0.006	0.078	0.353	-0.117	-0.234	0.109	0.256	0.272	0.318	0.287	0.271	0.333	0.525	0.369	0.404	0.466	0.513
18	-0.036	0.063	0.026	-0.063	0.017	0.042	0.054	-0.147	-0.130	-0.140	-0.161	-0.134	-0.143	-0.054	-0.030	-0.031	-0.035	-0.020

TABLE A.5.3 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SENIORS

OBS	NAME	BB101	BBO42	BBO39	SIBS	BB103	BOTHPAR	BBO37B	BBO37C	BBO47G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN
19	BLACK	-0.234	-0.043	-0.105	0.149	-0.111	-0.212	0.200	0.241	-0.059	-0.092	-0.156	-0.130	-0.198	-0.071	0.008	-0.095
20	REGION1	0.038	0.013	0.034	-0.022	0.087	0.013	-0.047	-0.067	-0.001	0.040	0.073	0.053	0.041	0.026	0.032	-0.049
21	REGION2	-0.144	-0.071	-0.072	-0.011	-0.116	-0.074	0.104	0.144	-0.031	-0.033	-0.133	-0.095	-0.105	-0.032	-0.008	0.018
22	REGION3	0.074	-0.006	-0.034	0.027	0.131	0.072	-0.048	-0.077	0.006	0.008	0.038	0.022	0.051	-0.032	-0.053	-0.089
23	REGION4	0.046	0.078	0.090	0.006	-0.109	-0.008	-0.018	-0.021	0.031	-0.013	0.036	0.032	0.019	0.018	0.038	0.099
24	RELCATH	0.062	-0.046	-0.014	0.122	0.056	0.056	-0.090	-0.110	0.004	0.083	0.102	0.060	0.089	0.037	0.025	0.171
25	BBO11C	0.109	0.149	0.157	-0.050	0.081	0.033	-0.010	-0.021	0.114	0.073	0.100	0.102	0.102	0.198	0.205	-0.021
26	BBO11D	0.089	0.114	0.126	-0.037	0.074	0.048	-0.021	-0.029	0.057	0.050	0.087	0.065	0.095	0.172	0.168	-0.030
27	ADVMTH	0.248	0.281	0.346	-0.137	0.171	0.109	-0.075	-0.101	0.126	0.165	0.215	0.206	0.241	0.414	0.110	-0.091

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BBO11C	BBO11D	ADVMTH	HMWRK	BBO16	BBO59E	MBBO53E	MBBO53F	MBBO53G	MYBO19A	MYBO19B	MYBO19E
19	1.000	-0.026	0.220	-0.104	-0.114	-0.178	-0.013	-0.025	-0.110	0.013	-0.026	-0.055	-0.029	-0.021	-0.003	-0.022	-0.046	-0.113
20	-0.026	1.000	-0.353	-0.334	-0.250	0.198	-0.004	0.013	0.122	0.058	-0.000	0.011	-0.028	-0.103	-0.086	-0.047	0.116	-0.131
21	0.220	-0.353	1.000	-0.428	-0.319	-0.211	-0.015	-0.021	-0.100	-0.054	-0.050	-0.080	0.007	0.241	0.093	-0.012	0.154	-0.098
22	-0.104	-0.334	-0.428	1.000	-0.303	0.028	-0.009	0.018	0.011	0.015	-0.030	-0.026	-0.063	-0.033	-0.161	0.122	0.094	0.057
23	-0.114	-0.250	-0.319	-0.303	1.000	0.009	0.032	-0.009	-0.023	-0.014	0.095	0.115	0.095	-0.140	0.168	-0.079	-0.170	0.190
24	-0.178	0.198	-0.211	0.028	0.009	1.000	-0.000	0.005	0.067	0.020	0.019	0.048	-0.014	-0.054	-0.040	-0.018	-0.076	0.009
25	-0.013	-0.004	-0.015	-0.009	0.032	-0.000	1.000	0.461	0.313	0.222	-0.066	-0.037	0.026	-0.011	0.016	-0.012	-0.044	0.000
26	-0.025	0.013	-0.021	0.018	-0.009	0.005	0.461	1.000	0.434	0.200	-0.087	-0.056	0.016	-0.005	0.005	0.021	-0.013	0.015
27	-0.110	0.122	-0.100	0.011	-0.023	0.067	0.313	0.434	1.000	0.347	-0.155	-0.049	0.071	-0.006	0.035	0.038	-0.087	0.070

OBS	MYBO19F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BBOG8A	BBO68B	EBO68C	EBO68D
19	-0.289	0.007	-0.017	-0.027	-0.022	0.051	0.080	-0.224	-0.244	-0.254	-0.241	-0.237	-0.251	0.036	-0.003	0.005	0.033	0.039
20	-0.189	-0.001	0.053	0.131	-0.140	0.008	0.090	0.068	0.112	0.087	0.071	0.105	0.093	0.035	0.038	0.033	0.027	0.019
21	-0.044	-0.150	-0.242	-0.071	0.022	0.050	-0.053	-0.134	-0.168	-0.168	-0.134	-0.160	-0.175	-0.034	-0.020	-0.014	-0.012	-0.018
22	0.079	-0.147	-0.095	-0.016	0.034	-0.013	-0.150	0.064	0.030	0.073	0.056	0.041	0.081	-0.034	-0.015	-0.018	-0.048	-0.045
23	0.162	0.354	0.341	-0.036	0.083	-0.053	0.143	0.013	0.047	0.023	0.019	0.031	0.016	0.043	0.036	0.039	0.042	0.054
24	0.012	0.028	0.073	0.030	-0.033	0.005	0.085	0.025	0.050	0.060	0.026	0.030	0.062	0.002	-0.002	0.002	-0.001	0.001
25	-0.009	0.009	0.036	0.296	-0.149	-0.145	0.067	0.242	0.261	0.266	0.271	0.275	0.269	0.293	0.231	0.243	0.244	0.224
26	0.010	-0.032	-0.003	0.283	-0.154	-0.125	0.016	0.219	0.200	0.357	0.236	0.207	0.376	0.259	0.202	0.215	0.221	0.196
27	0.061	-0.041	0.073	0.524	-0.234	-0.285	0.112	0.466	0.459	0.677	0.506	0.464	0.698	0.543	0.421	0.452	0.474	0.434

TABLE A.5.3 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SENIORS

OBS	NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN
28	HMWRK	0.077	0.148	0.186	-0.038	0.078	0.034	-0.017	-0.023	0.171	0.073	0.109	0.110	0.110	0.229	0.239	-0.038
29	BB016	0.008	-0.022	-0.033	0.046	-0.025	-0.082	0.038	0.037	-0.034	-0.046	-0.073	-0.047	-0.054	-0.105	-0.108	0.022
30	BB059E	0.098	0.036	0.043	-0.000	0.030	-0.017	0.021	0.004	-0.054	0.043	0.027	0.054	0.032	-0.017	-0.016	0.001
31	MBB053E	0.070	0.083	0.116	-0.007	0.052	0.013	-0.017	-0.017	0.033	0.026	0.024	0.031	0.022	0.058	0.052	0.010
32	MBB053F	0.016	0.005	0.011	-0.013	0.043	0.025	0.001	0.008	0.016	0.030	-0.004	0.010	0.014	-0.001	-0.008	-0.019
33	MBB053G	0.030	0.063	0.088	-0.011	-0.018	-0.009	0.006	0.008	0.032	0.001	-0.004	0.012	-0.003	0.052	0.049	0.029
34	MYB019A	0.033	0.039	0.022	0.002	0.068	0.034	-0.005	-0.012	0.012	0.028	0.009	0.035	0.037	0.013	0.009	-0.054
35	MYB019B	-0.090	-0.083	-0.141	0.026	0.011	0.032	0.015	0.024	-0.015	0.009	-0.041	-0.018	0.001	-0.086	-0.086	-0.029
36	MYB019E	0.105	0.122	0.136	-0.025	0.060	0.031	-0.044	-0.051	0.037	0.035	0.050	0.061	0.063	0.065	0.048	-0.019

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	ADVMTH	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E
28	0.013	0.058	-0.054	0.015	-0.014	0.020	0.222	0.200	0.347	1.000	-0.164	-0.176	0.068	0.029	0.041	0.050	-0.039	0.058
29	-0.026	-0.000	-0.050	-0.030	0.095	0.019	-0.066	-0.087	-0.155	-0.164	1.000	0.310	-0.020	-0.078	-0.014	-0.047	-0.052	0.009
30	-0.055	0.011	-0.080	-0.026	0.115	0.048	-0.037	-0.056	-0.049	-0.176	0.310	1.000	-0.004	-0.127	0.005	-0.072	-0.194	0.018
31	-0.029	-0.028	0.007	-0.063	0.095	-0.014	0.026	0.016	0.071	0.068	-0.020	-0.004	1.000	0.515	0.667	0.252	0.091	0.348
32	-0.021	-0.103	0.241	-0.033	-0.140	-0.054	-0.011	-0.005	-0.006	0.029	-0.078	-0.127	0.515	1.000	0.482	0.287	0.362	0.223
33	-0.003	-0.086	0.093	-0.161	0.168	-0.040	0.016	0.005	0.035	0.044	-0.014	0.005	0.667	0.482	1.000	0.186	0.027	0.348
34	-0.022	-0.047	-0.012	0.122	-0.079	-0.018	-0.012	0.021	0.038	0.050	-0.047	-0.072	0.252	0.287	0.186	1.000	0.576	0.416
35	-0.046	-0.116	0.154	0.084	-0.170	-0.076	-0.044	-0.013	-0.087	-0.039	-0.052	-0.194	0.091	0.362	0.027	0.576	1.000	0.242
36	-0.113	-0.131	-0.088	0.057	0.190	0.009	0.000	0.015	0.070	0.058	0.009	0.018	0.348	0.223	0.348	0.416	0.242	1.000

OBS	MYB019F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BB068A	BB068B	EB068C	EB068D
28	0.025	-0.049	0.012	0.325	-0.182	-0.143	0.061	0.208	0.197	0.263	0.216	0.204	0.281	0.359	0.231	0.253	0.289	0.291
29	-0.010	0.173	0.123	-0.130	0.105	0.020	0.002	-0.080	-0.065	-0.122	-0.081	-0.064	-0.129	-0.130	-0.055	-0.070	-0.102	-0.120
30	-0.002	0.150	0.287	-0.074	0.085	-0.014	0.110	-0.018	0.016	-0.032	-0.007	0.006	-0.041	-0.053	0.000	-0.024	-0.057	-0.066
31	0.315	-0.104	-0.030	0.058	-0.037	-0.025	-0.009	0.065	0.069	0.066	0.069	0.067	0.068	0.069	0.052	0.050	0.056	0.046
32	0.288	-0.279	-0.414	0.025	-0.051	0.030	-0.043	0.018	0.003	0.015	0.025	0.004	0.015	-0.014	-0.004	-0.008	-0.009	-0.016
33	0.287	-0.066	-0.010	0.031	-0.008	-0.027	0.083	0.024	0.034	0.021	0.030	0.030	0.024	0.058	0.052	0.052	0.051	0.042
34	0.339	-0.261	-0.281	0.012	0.026	-0.041	-0.358	0.060	0.038	0.064	0.058	0.043	0.067	0.015	0.006	0.004	0.009	0.007
35	0.245	-0.230	-0.612	-0.075	0.049	0.029	-0.592	-0.012	-0.063	-0.045	-0.019	-0.061	-0.048	-0.118	-0.090	0.095	-0.092	-0.088
36	0.555	-0.047	-0.006	0.040	0.023	-0.068	-0.143	0.086	0.105	0.117	0.095	0.110	0.121	0.076	0.050	0.049	0.056	0.048

TABLE A.5.3 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SENIORS

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN
37	MYBO19F	0.137	0.102	0.127	-0.046	0.102	0.110	-0.070	-0.095	0.034	0.079	0.078	0.095	0.109	0.060	0.022	-0.036
38	MABSENT	-0.019	0.011	-0.000	0.018	-0.074	-0.050	-0.006	0.003	-0.004	-0.043	-0.003	-0.018	-0.041	-0.013	-0.006	0.063
39	MCUTCLS	0.100	0.112	0.146	-0.031	-0.016	-0.021	-0.030	-0.039	0.023	0.005	0.060	0.049	0.025	0.088	0.078	0.026
40	ACADEM	0.173	0.234	0.272	-0.118	0.120	0.076	-0.044	-0.060	0.135	0.115	0.158	0.159	0.163	0.350	0.353	-0.063
41	GENERAL	-0.054	-0.073	-0.088	0.052	-0.048	-0.021	0.032	0.028	-0.081	-0.033	-0.063	-0.044	-0.053	-0.122	-0.117	0.017
42	VOCATNL	-0.120	-0.169	-0.198	0.064	-0.073	-0.043	0.006	0.017	-0.056	-0.068	-0.082	-0.105	-0.097	-0.228	-0.234	0.042
43	LGSIZE	0.104	0.089	0.168	-0.057	-0.029	-0.035	-0.013	-0.022	0.025	0.005	0.055	0.023	0.007	0.105	0.109	0.054
44	READBOTH	0.194	0.199	0.245	-0.130	0.149	0.119	-0.086	-0.127	0.126	0.159	0.180	0.220	0.227	0.266	0.256	-0.147
45	VOCBOTH	0.243	0.253	0.300	-0.164	0.162	0.107	-0.083	-0.132	0.130	0.172	0.215	0.235	0.244	0.288	0.272	-0.130

OBS	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	ADVMTH	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYBO19A	MYBO19B	MYBO19E
37	-0.289	-0.189	-0.044	0.079	0.162	0.012	-0.009	0.010	0.051	0.025	-0.010	-0.002	0.315	0.288	0.287	0.339	0.245	0.555
38	0.007	-0.001	-0.150	-0.147	0.354	0.029	0.009	-0.032	-0.041	-0.049	0.173	0.150	-0.104	-0.279	-0.066	-0.261	-0.230	-0.047
39	-0.017	0.053	-0.242	-0.095	0.341	0.073	0.036	-0.003	0.073	0.012	0.123	0.287	-0.030	-0.414	-0.010	-0.281	-0.612	-0.006
40	-0.027	0.131	-0.071	-0.016	-0.036	0.030	0.296	0.283	0.524	0.325	-0.130	-0.074	0.058	0.025	0.031	0.012	-0.075	0.040
41	-0.022	-0.140	0.022	0.034	0.083	-0.033	-0.149	-0.154	-0.234	-0.182	0.105	0.085	-0.037	-0.051	-0.008	0.026	0.049	0.023
42	0.051	0.008	0.050	-0.013	-0.053	0.005	-0.145	-0.125	-0.285	-0.143	0.020	-0.014	-0.025	0.030	-0.027	-0.041	0.029	-0.068
43	0.080	0.090	-0.053	-0.150	0.143	0.085	0.067	0.016	0.112	0.061	0.002	0.110	-0.009	-0.043	0.083	-0.358	-0.592	-0.143
44	-0.224	0.068	-0.134	0.064	0.013	0.025	0.242	0.219	0.466	0.208	-0.080	-0.019	0.065	0.018	0.024	0.060	-0.012	0.086
45	-0.244	0.112	-0.168	0.030	0.047	0.050	0.261	0.200	0.459	0.197	-0.065	0.016	0.069	0.003	0.034	0.038	-0.063	0.105

OBS	MYBO19F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BB068A	BB068B	EB068C	EB068D
37	1.000	-0.143	-0.085	0.029	0.040	-0.068	-0.186	0.133	0.137	0.153	0.151	0.144	0.153	0.027	0.028	0.019	0.014	0.002
38	-0.143	1.000	0.521	-0.054	0.050	0.001	0.058	-0.054	-0.030	-0.057	-0.052	-0.027	-0.062	-0.005	-0.003	-0.001	-0.001	0.011
39	-0.085	0.521	1.000	0.034	0.014	-0.055	0.351	0.029	0.077	0.047	0.033	0.075	0.050	0.108	0.081	0.085	0.074	0.074
40	0.029	-0.054	0.034	1.000	-0.564	-0.425	0.106	0.333	0.358	0.427	0.363	0.373	0.446	0.486	0.358	0.377	0.406	0.387
41	0.040	0.050	0.014	-0.564	1.000	-0.468	-0.124	-0.143	-0.146	-0.184	-0.150	-0.156	-0.196	-0.197	-0.136	-0.143	-0.156	-0.161
42	-0.068	0.001	-0.055	-0.425	-0.468	1.000	0.016	-0.186	-0.210	-0.244	-0.210	-0.216	-0.251	-0.297	-0.228	-0.237	-0.257	-0.230
43	-0.186	0.058	0.351	0.106	-0.124	0.016	1.000	0.022	0.066	0.056	0.031	0.057	0.061	0.144	0.103	0.112	0.109	0.104
44	0.133	-0.054	0.029	0.333	-0.143	-0.186	0.022	1.000	0.571	0.596	0.887	0.609	0.601	0.356	0.262	0.277	0.272	0.249
45	0.137	-0.030	0.077	0.358	-0.146	-0.210	0.066	0.571	1.000	0.560	0.649	0.851	0.567	0.373	0.300	0.302	0.294	0.259

TABLE A.5.3 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PUBLIC SENIORS

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OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN	BLACK
46	MATHBOTH	0.257	0.242	0.305	-0.122	0.184	0.142	-0.109	-0.146	0.107	0.169	0.220	0.228	0.265	0.335	0.318	-0.140	-0.254
47	TOTREAD	0.217	0.230	0.272	-0.144	0.161	0.124	-0.086	-0.132	0.134	0.188	0.199	0.254	0.258	0.300	0.287	-0.161	-0.241
48	TOTVOC	0.228	0.262	0.307	-0.169	0.160	0.104	-0.088	-0.132	0.127	0.164	0.208	0.234	0.239	0.285	0.271	-0.134	-0.237
49	TOTMATH	0.263	0.253	0.316	-0.118	0.180	0.141	-0.115	-0.150	0.107	0.171	0.224	0.229	0.272	0.347	0.333	-0.143	-0.251
50	EDPLANS	0.227	0.341	0.397	-0.126	0.158	0.047	-0.015	-0.027	0.169	0.126	0.173	0.184	0.182	0.503	0.525	-0.054	0.036
51	BB068A	0.196	0.290	0.321	-0.113	0.143	0.029	-0.005	-0.025	0.136	0.094	0.135	0.149	0.137	0.372	0.369	-0.030	-0.003
52	BB068B	0.189	0.279	0.315	-0.112	0.136	0.028	-0.005	-0.016	0.147	0.094	0.138	0.156	0.143	0.402	0.404	-0.031	0.005
53	EB068C	0.174	0.266	0.299	-0.107	0.123	0.034	0.004	-0.010	0.151	0.105	0.135	0.151	0.151	0.457	0.466	-0.035	0.033
54	EB068D	0.160	0.239	0.277	-0.096	0.106	0.030	0.009	-0.005	0.155	0.098	0.126	0.142	0.142	0.486	0.513	-0.020	0.039

OBS	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	ADVMTH	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F
46	0.087	-0.168	0.073	0.023	0.060	0.266	0.357	0.677	0.263	-0.122	-0.032	0.066	0.015	0.021	0.064	-0.045	0.117	0.153
47	0.071	-0.134	0.056	0.019	0.026	0.271	0.236	0.506	0.216	-0.081	-0.007	0.069	0.025	0.030	0.058	-0.019	0.095	0.151
48	0.105	-0.160	0.041	0.031	0.030	0.275	0.207	0.464	0.204	-0.064	0.006	0.067	0.004	0.030	0.043	-0.061	0.110	0.144
49	0.093	-0.175	0.081	0.016	0.062	0.269	0.376	0.698	0.281	-0.129	-0.041	0.068	0.015	0.024	0.067	-0.048	0.121	0.153
50	0.035	-0.034	-0.034	0.043	0.002	0.293	0.259	0.543	0.359	-0.130	-0.053	0.069	-0.014	0.058	0.015	-0.118	0.076	0.027
51	0.038	-0.020	-0.045	0.036	-0.002	0.231	0.202	0.421	0.231	-0.055	0.000	0.052	-0.004	0.052	0.006	-0.090	0.050	0.028
52	0.033	-0.014	-0.048	0.039	0.002	0.243	0.215	0.452	0.253	-0.070	-0.024	0.050	-0.008	0.052	0.004	-0.095	0.049	0.019
53	0.027	-0.012	-0.048	0.042	-0.001	0.244	0.221	0.474	0.289	-0.102	-0.057	0.056	-0.009	0.051	0.009	-0.092	0.056	0.014
54	0.019	-0.018	-0.045	0.054	0.001	0.224	0.196	0.434	0.291	-0.120	-0.066	0.046	-0.016	0.042	0.007	-0.088	0.048	0.002

OBS	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BB068A	BB068B	EB068C	EB068D
46	-0.057	0.047	0.427	-0.184	-0.244	0.056	0.596	0.560	1.000	0.647	0.585	0.957	0.443	0.337	0.355	0.360	0.320
47	-0.052	0.033	0.363	-0.150	-0.210	0.031	0.887	0.649	0.647	1.000	0.696	0.653	0.392	0.294	0.305	0.303	0.273
48	-0.027	0.075	0.373	-0.156	-0.216	0.057	0.609	0.851	0.585	0.696	1.000	0.595	0.386	0.306	0.307	0.295	0.260
49	-0.062	0.050	0.446	-0.196	-0.251	0.061	0.601	0.567	0.957	0.653	0.595	1.000	0.464	0.349	0.371	0.377	0.337
50	-0.005	0.108	0.486	-0.197	-0.297	0.144	0.356	0.373	0.443	0.392	0.386	0.464	1.000	0.440	0.478	0.543	0.599
51	-0.003	0.081	0.358	-0.136	-0.228	0.103	0.262	0.300	0.337	0.284	0.306	0.349	0.440	1.000	0.848	0.610	0.421
52	-0.001	0.085	0.377	-0.143	-0.237	0.112	0.277	0.302	0.355	0.306	0.307	0.371	0.478	0.848	1.000	0.718	0.493
53	-0.001	0.074	0.406	-0.156	-0.257	0.109	0.272	0.294	0.360	0.303	0.295	0.377	0.543	0.610	0.718	1.000	0.694
54	0.011	0.074	0.387	-0.161	-0.230	0.104	0.249	0.259	0.320	0.273	0.260	0.337	0.599	0.421	0.493	0.694	1.000

TABLE A.5.4 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SENIORS

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104H	FATEXP
1	MEAN	5.057	4.995	5.843	2.922	7.482	0.843	1.771	1.529	2.485	0.900	0.846	0.888	0.861	0.733
2	STDEV	1.683	2.457	2.805	1.948	1.871	0.364	0.845	0.807	1.102	0.300	0.361	0.315	0.316	0.442
3	BB101	1.000	0.334	0.434	-0.032	0.417	0.282	-0.108	-0.077	0.095	0.056	0.108	0.149	0.141	0.310
4	BB042	0.334	1.000	0.554	-0.036	0.235	-0.025	0.030	0.062	0.060	0.047	0.097	0.150	0.093	0.197
5	BB039	0.434	0.554	1.000	-0.015	0.297	0.014	-0.119	-0.068	0.094	0.037	0.088	0.153	0.086	0.307
6	SIBS	-0.032	-0.036	-0.015	1.000	0.180	0.008	-0.127	-0.125	-0.095	0.039	-0.010	-0.028	-0.060	-0.077
7	BB103	0.417	0.235	0.297	0.180	1.000	0.161	-0.138	-0.072	0.089	0.114	0.148	0.183	0.151	0.120
8	BOTHPAR	0.282	-0.025	0.014	0.008	0.161	1.000	-0.157	-0.178	0.044	0.085	0.112	0.122	0.110	0.233
9	BB037B	-0.108	0.030	-0.119	-0.127	-0.138	-0.157	1.000	0.601	-0.040	-0.046	-0.054	-0.083	-0.080	-0.114
10	BB037C	-0.077	0.062	-0.068	-0.125	-0.072	-0.178	0.601	1.000	-0.011	-0.056	-0.050	-0.070	-0.075	-0.139
11	BB047G	0.095	0.060	0.094	-0.095	0.089	0.044	-0.040	-0.011	1.000	0.046	0.056	0.075	0.094	0.101

OBS	MOTEXP	HISPAN	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	ADVMTH	HMWRK	BB016	BB059E
1	0.782	0.058	0.050	0.347	0.239	0.263	0.151	0.639	0.286	0.280	2.894	5.182	2.130	0.299
2	0.413	0.234	0.217	0.476	0.426	0.440	0.358	0.480	0.452	0.449	1.340	3.772	1.144	0.458
3	0.218	-0.102	-0.112	-0.078	0.080	-0.038	0.054	-0.090	0.092	0.106	0.230	0.135	-0.027	0.140
4	0.208	-0.103	0.035	-0.032	0.032	-0.102	0.133	-0.217	0.122	0.122	0.239	0.260	-0.008	0.071
5	0.261	-0.091	-0.054	-0.037	0.048	-0.119	0.142	-0.157	0.157	0.144	0.291	0.216	0.005	0.103
6	-0.055	-0.004	-0.005	-0.065	-0.051	0.130	-0.013	0.201	-0.023	0.024	-0.061	-0.047	-0.006	-0.047
7	0.112	-0.130	-0.111	-0.034	0.042	0.048	-0.064	0.008	0.053	0.050	0.123	0.116	-0.035	0.047
8	0.091	-0.017	-0.147	-0.038	0.022	0.039	-0.024	0.096	0.056	0.052	0.020	0.001	-0.062	-0.021
9	-0.055	0.096	0.185	-0.019	0.024	-0.054	0.064	-0.070	-0.029	-0.074	-0.094	-0.049	0.027	0.042
10	-0.068	0.102	0.205	-0.058	0.047	-0.051	0.085	-0.118	0.002	-0.039	-0.061	-0.012	0.054	0.055
11	0.122	-0.033	-0.012	0.000	-0.012	0.023	-0.014	-0.045	0.059	0.045	0.058	0.188	-0.016	-0.073

OBS	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH
1	2.989	2.875	2.416	2.307	2.142	2.454	2.934	1.890	0.227	0.693	0.210	0.088	6.209	0.657
2	0.344	0.296	0.312	0.284	0.401	0.299	0.080	0.304	0.137	0.461	0.407	0.284	0.904	0.475
3	0.189	-0.010	0.121	0.125	-0.078	0.245	0.213	-0.067	0.186	0.178	-0.098	-0.146	-0.056	-0.093
4	0.296	-0.017	0.205	0.137	-0.101	0.313	0.165	-0.010	0.253	0.246	-0.189	-0.128	-0.104	-0.217
5	0.299	-0.034	0.184	0.155	-0.112	0.337	0.189	0.001	0.288	0.303	-0.211	-0.192	-0.112	-0.186
6	-0.097	0.066	-0.018	-0.048	-0.000	-0.116	-0.084	-0.013	-0.068	-0.058	0.041	0.043	0.081	0.178
7	0.121	0.009	0.125	0.089	-0.077	0.137	0.138	-0.107	0.085	0.119	-0.083	-0.061	-0.000	-0.032
8	-0.032	0.017	0.006	0.017	0.013	0.024	0.081	-0.079	-0.025	0.010	0.027	-0.036	0.041	0.056
9	-0.050	-0.009	-0.029	0.010	0.075	-0.033	-0.061	-0.010	-0.072	-0.073	0.044	0.045	-0.028	0.014
10	0.034	-0.054	0.031	0.050	0.077	0.028	-0.024	-0.015	-0.002	-0.052	0.039	0.024	-0.086	-0.048
11	0.040	0.011	0.027	0.006	-0.022	0.087	0.069	0.015	0.013	0.054	-0.059	-0.005	-0.041	-0.026

OBS	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BB068A	BB068B	EB068C	EB068D
1	0.340	0.003	5.109	5.423	12.312	12.283	15.342	21.568	2.893	0.672	0.706	0.747	0.784
2	0.474	0.054	1.992	1.808	3.934	3.989	5.406	5.780	0.948	0.470	0.456	0.435	0.412
3	0.089	0.042	0.091	0.151	0.189	0.120	0.137	0.192	0.227	0.236	0.213	0.228	0.172
4	0.210	0.055	0.158	0.223	0.225	0.184	0.230	0.236	0.335	0.266	0.266	0.256	0.236
5	0.181	0.052	0.209	0.250	0.293	0.244	0.249	0.307	0.373	0.285	0.285	0.281	0.265
6	-0.176	-0.019	-0.054	-0.092	-0.048	-0.059	-0.099	-0.053	-0.079	-0.056	-0.084	-0.093	-0.060
7	0.028	0.042	0.096	0.141	0.118	0.122	0.110	0.124	0.141	0.148	0.136	0.110	0.094
8	-0.056	-0.000	0.057	0.088	0.040	0.066	0.065	0.043	-0.025	0.039	0.016	-0.007	-0.001
9	-0.013	-0.009	-0.094	-0.103	-0.142	-0.117	-0.106	-0.159	-0.028	-0.040	-0.041	-0.030	-0.066
10	0.048	-0.002	-0.066	-0.080	-0.090	-0.074	-0.088	-0.084	0.005	-0.031	-0.014	-0.006	-0.037
11	0.025	0.011	0.073	0.099	0.067	0.080	0.087	0.063	0.123	0.095	0.113	0.147	0.142

TABLE A.5. 4 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SENIORS

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP
12	BB104C	0.056	0.047	0.037	0.039	0.114	0.085	-0.046	-0.056	0.046	1.000	0.385	0.463	0.381	0.090
13	BB104D	0.108	0.097	0.088	-0.010	0.148	0.112	-0.054	-0.050	0.056	0.385	1.000	0.378	0.401	0.136
14	BB104G	0.149	0.150	0.153	-0.028	0.183	0.122	-0.082	-0.070	0.075	0.463	0.378	1.000	0.423	0.167
15	BB104I	0.141	0.093	0.086	-0.060	0.151	0.110	-0.080	-0.075	0.094	0.381	0.401	0.423	1.000	0.146
16	FATEXP	0.310	0.197	0.307	-0.077	0.120	0.233	-0.114	-0.139	0.101	0.090	0.136	0.167	0.146	1.000
17	MOTEXP	0.218	0.208	0.261	-0.055	0.112	0.091	-0.055	-0.068	0.122	0.114	0.137	0.198	0.156	0.711
18	HISPAN	-0.102	-0.103	-0.091	-0.004	-0.130	-0.017	0.096	0.102	-0.033	-0.052	-0.039	-0.049	-0.062	-0.025
19	BLACK	-0.112	0.035	-0.054	-0.005	-0.111	-0.147	0.185	0.205	-0.012	-0.023	-0.035	-0.052	-0.028	-0.071
20	REGION1	-0.078	-0.032	-0.037	-0.065	-0.034	-0.038	-0.019	-0.058	0.000	0.063	0.084	0.062	0.012	0.028
21	REGION2	0.080	0.032	0.048	-0.051	0.042	0.022	0.024	0.047	-0.012	-0.027	-0.109	-0.040	-0.021	0.013
22	REGION3	-0.038	-0.102	-0.119	0.130	0.048	0.039	-0.064	-0.051	0.023	-0.002	-0.001	-0.036	0.009	-0.070

OBS	MOTEXP	HISPAN	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	ADVMTH	HMWRK	BB016	BB059E
12	0.114	-0.052	-0.023	0.063	-0.027	-0.002	-0.049	0.127	0.019	0.040	0.076	0.046	-0.034	-0.003
13	0.137	-0.039	-0.035	0.084	-0.109	-0.001	0.020	0.104	0.066	0.047	0.148	0.116	-0.074	-0.020
14	0.198	-0.049	-0.052	0.062	-0.040	-0.036	0.009	0.083	0.087	0.077	0.182	0.108	-0.028	0.024
15	0.156	-0.062	-0.028	0.042	-0.021	0.009	-0.042	0.068	0.045	0.085	0.164	0.096	-0.109	0.002
16	0.711	-0.025	-0.071	0.028	0.013	-0.070	0.034	0.001	0.138	0.149	0.307	0.180	-0.052	-0.015
17	1.000	0.005	0.001	0.019	0.020	-0.078	0.047	0.020	0.155	0.175	0.335	0.188	-0.068	-0.021
18	0.005	1.000	-0.057	-0.075	-0.022	-0.043	0.178	0.113	-0.021	-0.034	-0.044	-0.011	0.055	0.030
19	0.001	-0.057	1.000	-0.021	0.000	0.009	0.016	-0.112	0.004	-0.009	-0.024	0.001	0.022	-0.027
20	0.019	-0.075	-0.021	1.000	-0.408	-0.436	-0.307	0.151	-0.064	0.010	0.225	0.065	0.011	-0.050
21	0.020	-0.022	0.000	-0.408	1.000	-0.335	-0.236	-0.249	-0.075	0.019	-0.001	-0.081	-0.053	0.039
22	-0.078	-0.043	0.009	-0.436	-0.335	1.000	-0.252	0.195	0.054	-0.002	-0.149	-0.053	-0.039	-0.093

OBS	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH
12	-0.018	0.043	-0.017	0.064	0.010	0.039	0.097	-0.063	-0.013	0.060	-0.059	0.004	0.067	0.011
13	0.082	0.073	0.052	0.140	0.037	0.086	0.139	-0.083	0.005	0.112	-0.083	-0.041	0.018	0.025
14	0.058	0.017	0.040	0.099	0.003	0.087	0.149	-0.080	0.044	0.156	-0.108	-0.074	0.038	-0.027
15	0.041	0.032	0.003	0.096	-0.002	0.057	0.106	-0.047	0.045	0.087	-0.080	-0.007	0.045	-0.029
16	0.142	0.065	0.088	0.138	-0.009	0.154	0.151	-0.072	0.093	0.290	-0.158	-0.238	-0.019	-0.020
17	0.153	0.078	0.104	0.136	0.020	0.133	0.125	-0.066	0.081	0.346	-0.202	-0.263	-0.014	0.002
18	0.008	0.084	-0.008	0.010	0.040	-0.056	-0.166	0.035	0.049	-0.028	0.054	-0.025	0.007	0.052
19	-0.018	-0.057	-0.005	0.017	0.055	-0.081	-0.115	0.055	-0.015	0.025	-0.015	-0.021	-0.025	0.032
20	0.073	0.157	0.018	-0.042	-0.158	-0.139	0.016	0.006	-0.083	0.122	-0.172	0.068	0.238	0.066
21	-0.088	-0.253	-0.085	0.076	0.049	0.075	0.052	-0.109	0.044	0.011	0.055	-0.096	-0.289	-0.212
22	-0.149	0.114	-0.078	-0.105	0.108	-0.227	-0.014	-0.100	-0.234	-0.166	0.127	0.078	0.257	0.278

OBS	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BB068A	BB068B	EB068C	EB068D
12	-0.012	0.007	0.083	0.096	0.087	0.086	0.081	0.090	0.076	0.079	0.062	0.068	0.037
13	-0.026	0.015	0.104	0.141	0.145	0.128	0.125	0.142	0.129	0.127	0.100	0.111	0.078
14	0.026	0.014	0.158	0.202	0.195	0.194	0.189	0.188	0.175	0.172	0.169	0.173	0.152
15	0.027	0.013	0.162	0.180	0.183	0.170	0.170	0.197	0.153	0.116	0.085	0.096	0.103
16	0.017	0.024	0.209	0.224	0.285	0.224	0.212	0.281	0.418	0.318	0.355	0.410	0.448
17	-0.005	0.023	0.216	0.237	0.322	0.234	0.240	0.308	0.458	0.341	0.400	0.462	0.505
18	-0.051	-0.010	-0.065	-0.077	-0.096	-0.096	-0.089	-0.103	0.037	0.003	-0.005	0.006	-0.005
19	-0.032	0.004	-0.082	-0.098	-0.112	-0.098	-0.086	-0.111	0.057	0.010	0.037	0.051	0.053
20	-0.065	-0.016	0.074	0.113	0.113	0.084	0.156	0.117	0.045	0.077	0.066	0.026	0.017
21	0.210	0.025	-0.048	-0.063	-0.027	-0.029	-0.082	-0.028	0.022	-0.003	0.009	0.037	0.010
22	-0.280	0.011	-0.013	-0.049	-0.082	-0.034	-0.070	-0.095	-0.095	-0.090	-0.085	-0.080	-0.070

TABLE A.5.4 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SENIORS

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP
23	REGION4	0.054	0.133	0.142	-0.013	-0.064	-0.024	0.064	0.085	-0.014	-0.049	0.020	0.009	-0.042	0.034
24	RELCATH	-0.090	-0.217	-0.157	0.201	0.008	0.096	-0.070	-0.118	-0.045	0.127	0.104	0.083	0.068	0.001
25	BB011C	0.092	0.122	0.157	-0.023	0.053	0.056	-0.029	0.002	0.059	0.019	0.066	0.087	0.045	0.138
26	BB011D	0.106	0.122	0.144	0.024	0.050	0.052	-0.074	-0.039	0.045	0.040	0.047	0.077	0.085	0.149
27	ADVMTH	0.230	0.239	0.291	-0.061	0.123	0.020	-0.094	-0.061	0.058	0.076	0.148	0.182	0.164	0.307
28	HMWRK	0.135	0.260	0.216	-0.047	0.116	0.001	-0.049	-0.012	0.188	0.046	0.116	0.108	0.096	0.180
29	BB016	-0.027	-0.008	0.005	-0.006	-0.035	-0.062	0.027	0.054	-0.016	-0.034	-0.074	-0.028	-0.109	-0.052
30	BB059E	0.140	0.071	0.103	-0.047	0.047	-0.021	0.042	0.055	-0.073	-0.003	-0.020	0.024	0.002	-0.015
31	MBB053E	0.189	0.296	0.299	-0.097	0.121	-0.032	-0.050	0.034	0.040	-0.018	0.082	0.058	0.041	0.142
32	MBB053F	-0.010	-0.017	-0.034	0.066	0.009	0.017	-0.009	-0.054	0.011	0.043	0.073	0.017	0.032	0.065
33	MBB053G	0.121	0.205	0.184	-0.018	0.125	0.006	-0.029	0.031	0.027	-0.017	0.052	0.040	0.003	0.088

OBS	MOTEXP	HISPAN	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	ADVMTH	HMWRK	BB016	BB059E
23	0.047	0.178	0.016	-0.307	-0.236	-0.252	1.000	-0.144	0.107	-0.034	-0.114	0.076	0.096	0.133
24	0.020	0.113	-0.112	0.151	-0.249	0.195	-0.144	1.000	0.063	0.025	0.052	-0.058	-0.072	-0.119
25	0.155	-0.021	0.004	-0.064	-0.075	0.054	0.107	0.063	1.000	0.408	0.269	0.198	0.003	0.023
26	0.175	-0.034	-0.009	0.010	0.019	-0.002	-0.034	0.025	0.408	1.000	0.447	0.222	-0.082	-0.050
27	0.335	-0.044	-0.024	0.225	-0.001	-0.149	-0.114	0.052	0.269	0.447	1.000	0.304	-0.125	-0.008
28	0.188	-0.011	0.001	0.065	-0.081	-0.053	0.076	-0.058	0.198	0.222	0.304	1.000	-0.125	-0.117
29	-0.068	0.055	0.022	0.011	-0.053	-0.039	0.096	-0.072	0.003	-0.082	-0.125	-0.125	1.000	0.279
30	-0.021	0.030	-0.027	-0.050	0.039	-0.093	0.133	-0.119	0.023	-0.050	-0.008	-0.117	0.279	1.000
31	0.153	0.008	-0.018	0.073	-0.088	-0.149	0.190	-0.206	0.037	0.091	0.323	0.322	-0.020	0.081
32	0.078	0.084	-0.057	0.157	-0.253	0.114	-0.047	0.354	0.033	0.055	0.153	0.145	-0.092	-0.119
33	0.104	-0.008	-0.005	0.018	-0.085	-0.078	0.173	-0.041	0.048	0.086	0.227	0.263	-0.052	-0.002

OBS	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH
23	0.190	-0.047	0.173	0.095	0.020	0.375	-0.066	0.246	0.349	0.029	0.007	-0.072	-0.287	-0.178
24	-0.206	0.354	-0.041	-0.027	0.129	-0.352	-0.160	-0.230	-0.385	-0.027	-0.016	0.067	0.476	0.710
25	0.037	0.033	0.048	0.044	-0.031	0.071	0.032	-0.004	0.082	0.209	-0.135	-0.134	0.050	0.063
26	0.091	0.055	0.086	0.098	0.027	0.051	0.069	-0.059	0.016	0.221	-0.157	-0.120	0.023	0.030
27	0.323	0.153	0.227	0.291	0.065	0.113	0.163	-0.217	0.040	0.468	-0.292	-0.309	0.058	0.056
28	0.322	0.145	0.263	0.188	-0.004	0.260	0.138	-0.083	0.114	0.270	-0.235	-0.092	-0.005	-0.118
29	-0.020	-0.092	-0.052	-0.127	-0.129	0.039	-0.036	0.195	0.148	-0.068	0.035	0.051	-0.066	-0.095
30	0.081	-0.119	-0.002	0.010	-0.174	0.119	0.040	0.109	0.293	0.004	0.030	-0.061	-0.080	-0.157
31	1.000	0.270	0.759	0.487	0.194	0.412	0.226	-0.206	0.215	0.316	-0.257	-0.138	-0.217	-0.231
32	0.270	1.000	0.418	0.220	0.295	-0.143	0.012	-0.461	-0.372	0.135	-0.151	0.014	0.490	0.431
33	0.759	0.418	1.000	0.432	0.340	0.291	0.200	-0.317	-0.013	0.256	-0.212	-0.111	-0.089	0.036

OBS	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BB068A	BB068B	EB068C	EB068D
23	0.181	-0.023	-0.027	-0.014	-0.015	-0.036	-0.024	-0.001	0.030	0.012	0.006	0.021	0.016
24	-0.705	-0.052	-0.038	-0.029	-0.038	-0.074	-0.050	-0.054	-0.063	-0.030	-0.021	-0.051	-0.025
25	-0.064	0.008	0.225	0.291	0.268	0.253	0.318	0.276	0.262	0.177	0.183	0.206	0.196
26	-0.034	0.031	0.252	0.245	0.402	0.274	0.285	0.429	0.278	0.204	0.208	0.221	0.190
27	-0.063	0.059	0.395	0.447	0.620	0.444	0.447	0.640	0.522	0.407	0.424	0.428	0.381
28	0.111	0.062	0.219	0.265	0.260	0.228	0.260	0.278	0.376	0.202	0.222	0.256	0.251
29	0.095	0.002	-0.121	-0.085	-0.137	-0.121	-0.070	-0.140	-0.084	-0.032	-0.060	-0.065	-0.073
30	0.156	0.006	-0.018	-0.006	-0.060	-0.003	-0.007	-0.060	-0.021	0.038	0.012	-0.014	-0.048
31	0.222	0.084	0.203	0.247	0.234	0.226	0.249	0.260	0.282	0.242	0.226	0.219	0.153
32	-0.436	0.030	0.093	0.133	0.105	0.073	0.135	0.087	0.099	0.092	0.092	0.071	0.016
33	-0.044	0.063	0.097	0.133	0.134	0.104	0.121	0.145	0.176	0.175	0.169	0.153	0.111

TABLE A.5.4 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SENIORS

OBS	_NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP
34	MYBO19A	0.125	0.137	0.155	-0.048	0.089	0.017	0.010	0.050	0.005	0.064	0.140	0.099	0.096	0.138
35	MYBO19B	-0.078	-0.101	-0.112	-0.000	-0.077	0.013	0.075	0.077	-0.022	0.010	0.037	0.003	-0.002	-0.009
36	MYBO19E	0.245	0.313	0.337	-0.116	0.137	0.024	-0.033	0.028	0.087	0.039	0.086	0.087	0.057	0.154
37	MYBO19F	0.213	0.165	0.189	-0.084	0.138	0.081	-0.061	-0.024	0.069	0.097	0.139	0.149	0.106	0.151
38	MABSENT	-0.067	-0.010	0.001	-0.013	-0.107	-0.079	-0.010	-0.015	0.015	-0.063	-0.083	-0.080	-0.047	-0.072
39	MCUTCLS	0.186	0.253	0.288	-0.068	0.085	-0.025	-0.072	-0.002	0.013	-0.013	0.005	0.044	0.045	0.093
40	ACADEM	0.178	0.246	0.303	-0.058	0.119	0.010	-0.073	-0.052	0.054	0.060	0.112	0.156	0.087	0.290
41	GENERAL	-0.098	-0.189	-0.211	0.041	-0.083	0.027	0.044	0.039	-0.059	-0.059	-0.083	-0.108	-0.080	-0.158
42	VOCATNL	-0.146	-0.128	-0.192	0.043	-0.061	-0.036	0.045	0.024	-0.005	0.004	-0.041	-0.074	-0.007	-0.238
43	LGSIZE	-0.056	-0.104	-0.112	0.081	-0.000	0.041	-0.028	-0.086	-0.041	0.067	0.048	0.038	0.045	-0.019
44	SCHCATH	-0.093	-0.217	-0.186	0.178	-0.032	0.056	0.014	-0.048	-0.026	0.011	0.025	-0.027	-0.029	-0.020

OBS	MOTEXP	HISPAN	BLACK	REGION1	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	ADVMTH	HMWRK	BB016	BB059E
34	0.136	0.010	0.017	-0.042	0.076	-0.105	0.095	-0.027	0.044	0.098	0.291	0.188	-0.127	0.010
35	0.020	0.040	0.055	-0.158	0.049	0.108	0.020	0.129	-0.031	0.027	0.065	-0.004	-0.129	-0.174
36	0.133	-0.056	-0.081	-0.139	0.075	-0.227	0.375	-0.352	0.071	0.051	0.113	0.260	0.039	0.119
37	0.125	-0.166	-0.115	0.016	0.052	-0.014	-0.066	-0.160	0.032	0.069	0.163	0.138	-0.036	0.040
38	-0.066	0.035	0.055	0.006	-0.109	-0.100	0.246	-0.230	-0.004	-0.059	-0.217	-0.083	0.195	0.109
39	0.081	0.049	-0.015	-0.083	0.044	-0.234	0.349	-0.385	0.082	0.016	0.040	0.114	0.148	0.293
40	0.346	-0.028	0.025	0.122	0.011	-0.166	0.029	-0.027	0.209	0.221	0.468	0.270	-0.068	0.004
41	-0.202	0.054	-0.015	-0.172	0.055	0.127	0.007	-0.016	-0.135	-0.157	-0.292	-0.235	0.035	0.030
42	-0.263	-0.025	-0.021	0.068	-0.096	0.078	-0.072	0.067	-0.134	-0.120	-0.309	-0.092	0.051	-0.061
43	-0.014	0.007	-0.025	0.238	-0.289	0.257	-0.287	0.476	0.050	0.023	0.058	-0.005	-0.066	-0.080
44	0.002	0.052	0.032	0.066	-0.212	0.278	-0.178	0.710	0.063	0.030	0.056	-0.118	-0.095	-0.157

OBS	MBB053E	MBB053F	MBB053G	MYBO19A	MYBO19B	MYBO19E	MYBO19F	MABSENT	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH
34	0.487	0.220	0.432	1.000	0.591	0.373	0.266	-0.544	-0.122	0.262	-0.136	-0.218	-0.292	0.103
35	0.194	0.295	0.340	0.591	1.000	0.081	0.041	-0.448	-0.599	0.040	0.004	-0.074	-0.224	0.313
36	0.412	-0.143	0.291	0.373	0.081	1.000	0.420	0.051	0.328	0.158	-0.069	-0.165	-0.597	-0.361
37	0.226	0.012	0.200	0.266	0.041	0.420	1.000	-0.221	-0.003	0.152	-0.095	-0.109	-0.141	-0.084
38	-0.206	-0.461	-0.317	-0.544	-0.448	0.051	-0.221	1.000	0.524	-0.169	0.123	0.072	-0.254	-0.419
39	0.215	-0.372	-0.013	-0.122	-0.599	0.329	-0.003	0.524	1.000	0.096	-0.040	-0.099	-0.265	-0.565
40	0.316	0.135	0.256	0.262	0.040	0.158	0.152	-0.169	0.096	1.000	-0.774	-0.468	-0.009	-0.012
41	-0.257	-0.151	-0.212	-0.136	0.004	-0.069	-0.095	0.123	-0.040	-0.774	1.000	-0.160	-0.093	-0.005
42	-0.138	0.014	-0.111	-0.218	-0.074	-0.165	-0.109	0.072	-0.099	-0.468	-0.160	1.000	0.168	0.027
43	-0.217	0.480	-0.089	-0.292	-0.224	-0.597	-0.141	-0.254	-0.265	-0.009	-0.093	0.168	1.000	0.471
44	-0.231	0.431	0.036	0.103	0.313	-0.361	-0.084	-0.419	-0.565	-0.012	-0.005	0.027	0.471	1.000

OBS	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BB068A	BB068B	EB068C	EBC68D
34	-0.111	0.071	0.117	0.165	0.146	0.111	0.155	0.155	0.232	0.212	0.208	0.193	0.142
35	-0.317	0.032	-0.026	-0.036	-0.045	-0.049	-0.067	-0.047	0.009	0.025	0.022	0.010	-0.001
36	0.357	0.040	0.079	0.143	0.089	0.107	0.135	0.113	0.208	0.165	0.159	0.149	0.115
37	0.085	-0.009	0.130	0.196	0.172	0.157	0.173	0.171	0.171	0.211	0.214	0.157	0.135
38	0.422	-0.018	-0.107	-0.147	-0.117	-0.102	-0.133	-0.108	-0.098	-0.149	-0.149	-0.131	-0.104
39	0.565	0.012	0.062	0.086	0.099	0.091	0.102	0.118	0.136	0.072	0.067	0.095	0.082
40	0.008	0.035	0.312	0.331	0.403	0.327	0.343	0.405	0.465	0.353	0.384	0.406	0.388
41	0.009	-0.027	-0.205	-0.242	-0.255	-0.217	-0.256	-0.269	-0.284	-0.222	-0.240	-0.252	-0.236
42	-0.025	-0.017	-0.172	-0.166	-0.243	-0.176	-0.168	-0.236	-0.328	-0.229	-0.256	-0.279	-0.281
43	-0.469	-0.026	0.045	0.049	0.027	0.022	0.052	0.013	-0.062	-0.006	0.001	-0.015	-0.011
44	-0.993	-0.075	-0.084	-0.057	-0.079	-0.126	-0.073	-0.103	-0.073	0.000	0.017	-0.010	0.009

TABLE A.5.4 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SENIORS

OBS	NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN	BLACK	REGION1
45	SCHOPRIV	0.089	0.210	0.181	-0.176	0.028	-0.056	-0.013	0.048	0.025	-0.012	-0.026	0.026	0.027	0.017	-0.005	-0.051	-0.032	-0.065
46	SCHELITE	0.042	0.055	0.052	-0.018	0.042	-0.000	-0.009	-0.002	0.011	0.007	0.015	0.014	0.013	0.024	0.023	-0.010	0.004	-0.016
47	READBOTH	0.091	0.158	0.208	-0.054	0.096	0.057	-0.094	-0.066	0.073	0.083	0.104	0.158	0.162	0.209	0.216	-0.065	-0.082	0.074
48	VOCBOTH	0.151	0.223	0.250	-0.092	0.141	0.088	-0.103	-0.080	0.099	0.096	0.141	0.202	0.180	0.224	0.237	-0.077	-0.098	0.113
49	MATHBOTH	0.189	0.225	0.293	-0.048	0.118	0.040	-0.142	-0.080	0.067	0.087	0.145	0.195	0.183	0.285	0.322	-0.096	-0.112	0.113
50	TOTREAD	0.120	0.184	0.244	-0.059	0.122	0.066	-0.117	-0.074	0.080	0.086	0.128	0.194	0.170	0.224	0.234	-0.096	-0.098	0.084
51	TOTVOC	0.137	0.230	0.249	-0.099	0.110	0.065	-0.106	-0.088	0.087	0.081	0.125	0.199	0.170	0.212	0.240	-0.089	-0.086	0.156
52	TOTMATH	0.192	0.236	0.307	-0.053	0.124	0.043	-0.159	-0.084	0.063	0.090	0.142	0.188	0.197	0.281	0.308	-0.103	-0.111	0.117
53	EDPLANS	0.227	0.335	0.373	-0.079	0.141	-0.025	-0.028	0.005	0.123	0.076	0.129	0.175	0.153	0.418	0.458	0.037	0.057	0.045

OBS	REGION2	REGION3	REGION4	RELCATH	BB101C	BB101D	ADVMTH	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB018A	MYB019B	MYB019E	MYB019F	MABSENT
45	0.210	-0.280	0.181	-0.705	-0.064	-0.034	-0.063	0.111	0.095	0.166	0.222	-0.436	-0.044	-0.111	-0.317	0.357	0.085	0.422
46	0.025	0.011	-0.023	-0.052	0.008	0.031	0.059	0.062	0.002	0.006	0.084	0.030	0.063	0.071	0.032	0.040	-0.009	-0.018
47	-0.048	-0.013	-0.027	-0.038	0.225	0.252	0.395	0.219	-0.121	-0.018	0.203	0.083	0.097	0.117	-0.026	0.079	0.130	-0.107
48	-0.063	-0.049	-0.014	-0.029	0.291	0.245	0.447	0.265	-0.085	-0.006	0.247	0.133	0.133	0.165	-0.036	0.143	0.196	-0.147
49	-0.027	-0.082	-0.015	-0.038	0.268	0.402	0.620	0.260	-0.137	-0.060	0.234	0.105	0.134	0.145	-0.045	0.089	0.172	-0.117
50	-0.029	-0.034	-0.036	-0.074	0.253	0.274	0.444	0.228	-0.121	-0.003	0.226	0.073	0.104	0.111	-0.049	0.107	0.157	-0.102
51	-0.082	-0.070	-0.024	-0.050	0.318	0.285	0.447	0.260	-0.070	-0.007	0.249	0.136	0.121	0.155	-0.067	0.135	0.173	-0.133
52	-0.028	-0.095	-0.001	-0.054	0.276	0.429	0.640	0.278	-0.140	-0.060	0.260	0.087	0.145	0.155	-0.047	0.113	0.171	-0.108
53	0.022	-0.095	0.030	-0.063	0.262	0.278	0.522	0.376	-0.084	-0.021	0.282	0.099	0.176	0.232	0.009	0.208	0.171	-0.098

OBS	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH	SCHOPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BB068A	BB068B	EBOG8C	EB068D
45	0.565	0.008	0.009	-0.025	-0.469	-0.893	1.000	-0.039	0.079	0.050	0.073	0.120	0.066	0.096	0.068	-0.004	-0.020	0.006	-0.011
46	0.012	0.035	-0.027	-0.017	-0.026	-0.075	-0.039	1.000	0.043	0.054	0.056	0.051	0.063	0.062	0.047	0.032	0.032	0.031	0.027
47	0.062	0.312	-0.205	-0.172	0.045	-0.084	0.079	0.043	1.000	0.543	0.553	0.879	0.595	0.555	0.343	0.243	0.263	0.267	0.237
48	0.086	0.331	-0.242	-0.166	0.049	-0.057	0.050	0.054	0.543	1.000	0.551	0.619	0.847	0.557	0.417	0.316	0.326	0.309	0.260
49	0.099	0.403	-0.255	-0.243	0.027	-0.079	0.073	0.056	0.553	0.551	1.000	0.616	0.577	0.955	0.453	0.358	0.373	0.371	0.337
50	0.091	0.327	-0.217	-0.176	0.022	-0.126	0.120	0.051	0.879	0.619	0.616	1.000	0.680	0.627	0.383	0.275	0.281	0.280	0.245
51	0.102	0.343	-0.256	-0.168	0.052	-0.073	0.066	0.063	0.595	0.847	0.577	0.680	1.000	0.598	0.426	0.302	0.306	0.287	0.259
52	0.118	0.405	-0.269	-0.236	0.013	-0.103	0.096	0.062	0.555	0.557	0.955	0.627	0.598	1.000	0.458	0.351	0.362	0.361	0.325
53	0.136	0.465	-0.284	-0.328	-0.062	-0.073	0.068	0.047	0.343	0.417	0.453	0.383	0.426	0.458	1.000	0.434	0.480	0.543	0.556

TABLE A.5.4 (CONT'D)

MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS OF VARIABLES USED IN THE REPORT: PRIVATE SENIORS

OBS	NAME_	BB101	BB042	BB039	SIBS	BB103	BOTHPAR	BB037B	BB037C	BB047G	BB104C	BB104D	BB104G	BB104I	FATEXP	MOTEXP	HISPAN	BLACK	REGION1
54	BB068A	0.236	0.266	0.285	-0.056	0.148	0.039	-0.040	-0.031	0.085	0.079	0.127	0.172	0.116	0.318	0.341	0.003	0.010	0.077
55	BB068B	0.213	0.266	0.285	-0.084	0.136	0.016	-0.041	-0.014	0.113	0.062	0.100	0.169	0.085	0.355	0.400	-0.005	0.037	0.066
56	EB068C	0.228	0.256	0.281	-0.093	0.110	-0.007	-0.030	-0.006	0.147	0.068	0.111	0.173	0.096	0.410	0.462	0.006	0.051	0.026
57	EB068D	0.172	0.236	0.265	-0.060	0.094	-0.001	-0.066	-0.037	0.142	0.037	0.078	0.152	0.103	0.448	0.505	-0.005	0.053	0.017

OBS	REGION2	REGION3	REGION4	RELCATH	BB011C	BB011D	ADVMTH	HMWRK	BB016	BB059E	MBB053E	MBB053F	MBB053G	MYB019A	MYB019B	MYB019E	MYB019F	MABSENT
54	-0.003	-0.090	0.012	-0.030	0.177	0.204	0.407	0.202	-0.032	0.038	0.242	0.092	0.175	0.212	0.025	0.165	0.211	-0.149
55	0.009	-0.085	0.006	-0.021	0.183	0.208	0.424	0.222	-0.060	0.012	0.226	0.092	0.168	0.208	0.022	0.159	0.214	-0.149
56	0.037	-0.080	0.021	-0.051	0.206	0.221	0.428	0.256	-0.065	-0.014	0.219	0.071	0.153	0.193	0.010	0.149	0.157	-0.131
57	0.040	-0.070	0.016	-0.025	0.186	0.180	0.381	0.251	-0.073	-0.048	0.153	0.046	0.111	0.142	-0.001	0.115	0.135	-0.104

OBS	MCUTCLS	ACADEM	GENERAL	VOCATNL	LGSIZE	SCHCATH	SCHDPRIV	SCHELITE	READBOTH	VOCBOTH	MATHBOTH	TOTREAD	TOTVOC	TOTMATH	EDPLANS	BB068A	BB068B	EB068C	EB068D
54	0.072	0.353	-0.222	-0.229	-0.006	0.000	-0.004	0.032	0.243	0.316	0.358	0.275	0.302	0.351	0.434	1.000	0.835	0.615	0.384
55	0.067	0.384	-0.240	-0.256	0.001	0.017	-0.020	0.032	0.263	0.326	0.373	0.281	0.306	0.362	0.480	0.835	1.000	0.749	0.490
56	0.095	0.406	-0.252	-0.279	-0.015	-0.010	0.006	0.031	0.267	0.309	0.371	0.280	0.287	0.361	0.543	0.615	0.749	1.000	0.680
57	0.082	0.388	-0.236	-0.281	-0.011	0.008	-0.011	0.027	0.237	0.260	0.337	0.245	0.259	0.325	0.556	0.384	0.490	0.680	1.000

APPENDIX B

ITEMS FROM THE STUDENT AND SCHOOL QUESTIONNAIRES USED IN THE ANALYSIS

B.1 Coding procedures used in this report

In general, values used in the analysis are the same as given in the HIGH SCHOOL BEYOND Codebook. Exceptions are described below and should be read in conjunction with section B.2 of this appendix.

Missing values: In appendix B.2, an asterisk (*) has been placed beside those response categories which were set to missing in the analysis. For example, in BB039 (Father's education), the responses "Do not live with Father" and "Don't know" have been set to missing.

Collapsed categories: Response categories that were collapsed in the analysis have been bracketed in the variable listing in Appendix B.2.

Variable reconstruction: The values on a limited number of variables were reconstructed:

Coursework taken: For seniors, EB04A--K recoded such that None=0, 1/2 year = 1, ... More than 3 years = 7. For sophomores, items YB006A--K and items YB009A--K were combined to match the senior coding.

Advanced mathematics courses: EB005A-G responses were recoded where 1=have taken, 0=have not taken. Responses then summed across items.

Honors English and Honors Mathematics: BB011C and BB011D recoded where 1=Yes, 0=No.

Homework: BB015 recoded to estimate actual hours. No homework assigned or no homework done = 0; Less than one hour a week = .5; Between 1 and 3 hours a week = 2; More than 3 hours, less than 5 = 4, Between 5 and 10 hours = 7.5; and More than 10 hours a week = 12.5.

Two Parent Household: Using BB036B-E variable was constructed such that if respondent lived either with own mother or female guardian and with either father or male guardian, then respondent was considered to be living in two parent household and response value = 1. Otherwise, response value = 0.

Mother's and Father's expectations: Items BB050A and BB050B were used to construct this variable. If response was "go to college" variable was coded 1, otherwise it was coded 0.

Cutting class: BB059E was recoded where True = 1, otherwise coded as 0.

Race: Coded black (1) if response to BB089 equals black (1) and response to BB090 is not equal to one of Hispanic or Spanish categories.

Ethnicity: Ethnicity is considered Hispanic (1) if response to BB090 is one of the Hispanic or Spanish categories.

Siblings: Items BB096A-E are used to construct sibling variable. Responses are first recoded to None=0, One=1, Two=2, Three=3, Four=4, and Five or more=5. Then these adjusted response values are summed over all items.

Household possessions: BB104C-I are recoded where Have=1, Otherwise=0.

B.2 Items from the Student Questionnaire

EB004A--K

4. Starting with the beginning of the tenth grade and through the end of this school year how
○ much course work will you have taken in each of the following subjects?

Count only courses that meet at least three times (or three periods) a week. (MARK ONE OVAL FOR EACH LINE)

	None	1/2 year	1 year	1 1/2 years	2 years	2 1/2 years	3 years	More than 3 years
a. Mathematics	○	○	○	○	○	○	○	○
b. English or literature	○	○	○	○	○	○	○	○
c. French	○	○	○	○	○	○	○	○
d. German	○	○	○	○	○	○	○	○
e. Spanish	○	○	○	○	○	○	○	○
f. History or social studies	○	○	○	○	○	○	○	○
g. Science	○	○	○	○	○	○	○	○
h. Business, office, or sales	○	○	○	○	○	○	○	○
i. Trade and industry	○	○	○	○	○	○	○	○
j. Technical courses	○	○	○	○	○	○	○	○
k. Other vocational courses	○	○	○	○	○	○	○	○

YB006A--K

6. During the tenth grade, including all of this school year, how much course work will you have
○ taken in each of the following subjects? Count only courses that meet at least three times (or three periods) a week. (MARK ONE OVAL FOR EACH LINE)

	None	1/2 year	1 year	More than 1 year
a. Mathematics	○	○	○	○
b. English or literature	○	○	○	○
c. French	○	○	○	○
d. German	○	○	○	○
e. Spanish	○	○	○	○
f. History or social studies	○	○	○	○
g. Science	○	○	○	○
h. Business, office, or sales	○	○	○	○
i. Trade and industry	○	○	○	○
j. Technical courses	○	○	○	○
k. Other vocational courses	○	○	○	○

* First two letters in variable identification refer to grade of respondents; "EB" refers to seniors (elder), "YB" refers to sophomores (younger), and "BB" refers to items asked both of

YB009A--K

9. During the 11th and 12th grades, how much course work do you plan to take in each of the
○ following subjects? (MARK ONE OVAL FOR EACH LINE)

	None	1/2 year	1 year	1 1/2 years	2 years	More than 2 years	* Don't know yet
a. Mathematics	○	○	○	○	○	○	○
b. English or literature	○	○	○	○	○	○	○
c. French	○	○	○	○	○	○	○
d. German	○	○	○	○	○	○	○
e. Spanish	○	○	○	○	○	○	○
f. History or social studies	○	○	○	○	○	○	○
g. Science	○	○	○	○	○	○	○
h. Business, office, or sales	○	○	○	○	○	○	○
i. Trade and industry	○	○	○	○	○	○	○
j. Technical courses	○	○	○	○	○	○	○
k. Other vocational courses	○	○	○	○	○	○	○

EB005A--G

5. Which of the following courses have you taken, counting the courses you are taking this semester? (MARK ONE OVAL FOR EACH LINE)

	Yes, have taken	No, have not taken
a. First-year algebra	○	○
b. Second-year algebra	○	○
c. Geometry	○	○
d. Trigonometry	○	○
e. Calculus	○	○
f. Physics	○	○
g. Chemistry	○	○

BB011

13. Have you ever been in any of the following kinds of courses or programs in high school?
○ (MARK ONE OVAL FOR EACH LINE)

	No	Yes
a. Remedial English (sometimes called basic or essential)	○	○
b. Remedial Mathematics (sometimes called basic or essential)	○	○
c. Advanced or honors program in English	○	○
d. Advanced or honors program in Mathematics	○	○

BB015

15. **Approximately what is the average amount of time you spend on homework a week? (MARK ONE)**

No homework is ever assigned .... ○
I have homework, but I don't do it .... ○
Less than 1 hour a week .... ○
Between 1 and 3 hours a week .... ○
More than 3 hours, less than 5 hours a week .... ○
Between 5 and 10 hours a week .... ○
More than 10 hours a week .... ○

BB016

17. ○ **Between the beginning of school last fall and Christmas vacation, about how many days were you absent from school for any reason, not counting illness? (MARK ONE)**

None .... ○
1 or 2 days .... ○
3 or 4 days .... ○
5 to 10 days .... ○
11 to 15 days .... ○
16 to 20 days .... ○
21 or more .... ○

BB017

18. ○ **Between the beginning of school last fall and Christmas vacation, about how many days were you late to school? (MARK ONE)**

None .... ○
1 or 2 days .... ○
3 or 4 days .... ○
5 to 10 days .... ○
11 to 15 days .... ○
16 to 20 days .... ○
21 or more .... ○

YB019A--F

19. **To what extent are the following disciplinary matters problems in your school? (MARK ONE OVAL FOR EACH LINE)**

	Often happens	Sometimes happens	Rarely or never happens
Students don't attend school	○	○	○
Students cut classes, even if they attend school	○	○	○
Students talk back to teachers	○	○	○
Students refuse to obey instructions	○	○	○
Students get in fights with each other	○	○	○
Students attack or threaten to attack teachers	○	○	○

YB020A--E

20. **Listed below are certain rules which some schools have. Please mark those which are enforced in your school. (MARK ALL THAT APPLY)**

School grounds closed to students at lunch time .... ○
Students responsible to the school for property damage .... ○
Hall passes required .... ○
"No smoking" rules .... ○
Rules about student dress .... ○

BB019

22. **Did you do any work for pay last week, not counting work around the house? (MARK ONE)**

Yes .... ○
No .... ○

BB032B--G, J, L--O and YB034L

34. **Have you participated in any of the following types of activities either in or out of school this year? (MARK ONE OVAL FOR EACH LINE)**

	Have not participated	Have participated actively
a. Athletic teams - in or out of school	○	○
b. Cheer leaders, pep club, majorettes	○	○
c. Debating or drama	○	○
d. Band or orchestra	○	○
e. Chorus or dance	○	○
f. Hobby clubs such as photography, model building, hot rod, electronics, crafts	○	○
g. School subject-matter clubs, such as science, history, language, business, art	○	○
h. Vocational education clubs, such as Future Homemakers, Teachers, Farmers of America, DECA, FBLA, or VICA	○	○
i. Youth organizations in the community, such as Scouts, Y, etc.	○	○
j. Church activities, including youth groups	○	○
k. Junior Achievement	○	○
l. Co-op club	○	○

BB032A--0*

32. **Have you participated in any of the following types of activities either in or out of school this year? (MAKE ONE OVAL FOR EACH LINE)**

	Have not participated	Have participated actively (but not as a leader or officer)	Have participated as a leader or officer
a. Varsity athletic teams	○	○	○
b. Other athletic teams - in or out of school	○	○	○
c. Cheer leaders, pep club, majorettes	○	○	○
d. Debating or drama	○	○	○
e. Band or orchestra	○	○	○
f. Chorus or dance	○	○	○
g. Hobby clubs such as photography, model building, hot rod, electronics, crafts	○	○	○
h. Honorary clubs, such as Beta Club or National Honor Society	○	○	○
i. School newspaper, magazine, yearbook, annual	○	○	○
j. School subject-matter clubs, such as science, history, language, business, art	○	○	○
k. Student council, student government, political club	○	○	○
l. Vocational education clubs, such as Future Homemakers, Teachers, Farmers of America, DECA, FBLA, or VICA	○	○	○
m. Youth organizations in the community, such as Scouts, Y, etc.	○	○	○
n. Church activities, including youth groups	○	○	○
o. Junior Achievement	○	○	○

BB036A--K

36. **Which of the following people live in the same household with you? (MARK ALL THAT**
○ **APPLY)**

a. I live alone ○
b. Father ○
c. Other male guardian (step-father or foster father) ○
d. Mother ○
e. Other female guardian (step-mother or foster mother) ○
f. Brother(s) and/or sister(s) (including step- or half-) ○
g. Grandparent(s) ○
h. My husband/wife ○
i. My child or my children ○
j. Other relative(s) (children or adults) ○
k. Non-relative(s) (children or adults) ○

*For the analysis in this report, last two categories were collapsed.

BB037 A--C

37. Did your mother (stepmother or female guardian) usually work during the following periods of your life? (MARK ONE OVAL FOR EACH LINE)

	Did not work	Worked part-time	Worked full-time	* Don't know	* Does not apply
a. When you were in high school	○	○	○	○	○
b. When you were in elementary school	○	○	○	○	○
c. Before you went to elementary school	○	○	○	○	○

BB039

39. What was the highest level of education your father (stepfather or male guardian) completed?
○ **(MARK ONE)**

Do not live with father (stepfather or male guardian) ○ *

Less than high school graduation ○
High school graduation only ○

Vocational, trade, or business school after high school
- Less than two years ○
- Two years or more ○

College program
- Less than two years of college ○
- Two or more years of college (including two-year degree) ○
- Finished college (four- or five-year degree) ○
- Master's degree or equivalent ○
- Ph.D., M.D., or other advanced professional degree ○

Don't know ○ *

BB042

42. What was the highest level of education your mother (stepmother or female guardian)
○ **completed? (MARK ONE)**

[RESPONSE CATEGORIES AS SAME AS BB039]

BB047G

47. How often do you spend time on the following activities outside of school? (MARK ONE OVAL FOR EACH LINE)

	Rarely or never	Less than once a week	Once or twice a week	Every day or almost every day
g. Talking with your mother or father about personal experiences	○	○	○	○

BB046A--C

46. **Are the following statements about your parents true or false? (MARK ONE OVAL FOR each line)**

	True	False	* Does not apply
a. My mother (stepmother or female guardian) keeps close track of how well I am doing in school	○	○	○
b. My father (stepfather or male guardian) keeps close track of how well I am doing in school	○	○	○
c. My parents (or guardians) almost always know where I am and what I'm doing	○	○	○

BB048

48. **During week days about how many hours per day do you watch TV? (MARK ONE)**

Don't watch TV during week .... ○
Less than 1 hour .... ○
1 hour or more, less than 2 .... ○
2 hours or more, less than 3 .... ○
3 hours or more, less than 4 .... ○
4 hours or more, less than 5 .... ○
5 or more .... ○

BB050A--E

50. **What do the following people think you ought to do after high school? (MARK ONE OVAL FOR EACH LINE)**

	Go to college	Get a full-time job	Enter a trade school or an apprenticeship	Enter military service	They don't care	I don't know	Does not apply
a. Your father	○	○	○	○	○	○	○
b. Your mother	○	○	○	○	○	○	○
c. A guidance counselor	○	○	○	○	○	○	○
d. Teachers	○	○	○	○	○	○	○
e. Friends or relatives about your own age	○	○	○	○	○	○	○

BB053E--H

53. **Please rate your school on each of the following aspects. (MARK ONE OVAL FOR EACH LINE)**

	Poor	Fair	Good	Excellent	* Don't know
e. Teacher interest in students	○	○	○	○	○
f. Effective discipline	○	○	○	○	○
g. Fairness of discipline	○	○	○	○	○
h. School spirit	○	○	○	○	○

BB058A--L

58. **How do you feel about each of the following statements? (MARK ONE OVAL FOR EACH LINE)**

	Agree strongly	Agree	Disagree	Disagree strongly	No opinion
a. I take a positive attitude toward myself	○	○	○	○	○
b. Good luck is more important than hard work for success	○	○	○	○	○
c. I feel I am a person of worth, on an equal plane with others	○	○	○	○	○
d. I am able to do things as well as most other people	○	○	○	○	○
e. Every time I try to get ahead, something or somebody stops me	○	○	○	○	○
f. Planning only makes a person unhappy, since plans hardly ever work out anyway	○	○	○	○	○
g. People who accept their condition in life are happier than those who try to change things	○	○	○	○	○
h. On the whole, I am satisfied with myself	○	○	○	○	○
i. What happens to me is my own doing	○	○	○	○	○
j. At times I think I am no good at all	○	○	○	○	○
k. When I make plans, I am almost certain I can make them work	○	○	○	○	○
l. I feel I do not have much to be proud of	○	○	○	○	○

BB059A--F

59. **Are the following statements about your experiences in school true or false? (MARK ONE OVAL FOR EACH LINE)**

	True	False
a. I am satisfied with the way my education is going	○	○
b. I have had disciplinary problems in school during the last year	○	○
c. I am interested in school	○	○
d. I have been suspended or put on probation in school	○	○
e. Every once in a while I cut a class	○	○
f. I don't feel safe at this school	○	○

BB061E

67. **Are the following statements about yourself true or false? (MARK ONE OVAL FOR EACH LINE)**

	True	False
e. I like to work hard in school	○	○

BB065

69. As things stand now, how far in school do you think you will get? (MARK ONE)
○

Less than high school graduation .... ○
High school graduation only .... ○

Vocational, trade, or business school after high school ....
- Less than two years .... ○
- Two years or more .... ○

College program ....
- Less than two years of college .... ○
- Two or more years of college (including two-year degree) .... ○
- Finish college (four- or five-year degree) .... ○
- Master's degree or equivalent .... ○
- Ph.D., M.D., or other advanced professional degree .... ○

YB072A & B, BB068A & B

72. Did you expect to go to college when you were in the following grades? (MARK ONE OVAL FOR EACH LINE)

When you were . . .	Yes	No	* Was not sure	* Hadn't thought about it
a. In the 6th grade?	○	○	○	○
b. In the 7th grade?	○	○	○	○
c. In the 8th grade?	○	○	○	○
d. In the 9th grade?	○	○	○	○

BB068A & B, EB068C & D

68. Did you expect to go to college when you were in the following grades? (MARK ONE OVAL FOR EACH LINE)

When you were . . .	Yes	No	* Was not sure	* Hadn't thought about it
a. In the 8th grade?	○	○	○	○
b. In the 9th grade?	○	○	○	○
c. In the 10th grade?	○	○	○	○
d. In the 11th grade?	○	○	○	○

EB073

73. If you plan to work full time after high school, do you have a definite job lined up for you after you leave high school? (MARK ONE)

Yes, I'll continue in a job I now have .... ○
Yes, I have a new job lined up .... ○
No, but I've inquired at employment agencies or potential employers, looked in the newspapers, etc. .... ○
No, I haven't done anything yet to get a job .... ○
Do not plan to work full time after high school .... ○ *

Background information . . .

BB083

83. Sex:
(MARK ONE)

Male ....○
Female ....○

BB087A--G

87. Do you have any of the following conditions? (MARK ALL THAT APPLY)
○

a. Specific learning disability ....○
b. Visual handicap ....○
c. Hard of hearing ....○
d. Deafness ....○
e. Speech disability ....○
f. Orthopedic handicap ....○
g. Other health impairment ....○

BB088

88. Do you feel that you have a physical condition that limits the kind or amount of work you can do on a job, or affects your chances for more education? (MARK ONE)

No ....○
Yes ....○

NOTE: The following four questions pertain to fundamental freedoms of expression. These and other questions will provide helpful information for the interpretation of survey results. If you have any reservations about answering questions 91, 92, 93 and 94, please remember that you may leave them unanswered.

BB091

91. What is your religious background? (MARK ONE)

Baptist ....○
Methodist ....○
Lutheran ....○
Presbyterian ....○
Episcopalian ....○
Other Protestant denomination ....○
Catholic ....○
Other Christian ....○
Jewish ....○
Other religion ....○
None ....○

BB089

90. What is your race? (MARK ONE)
○

Black ....○
White ....○
American Indian or Alaskan Native ....○
Asian or Pacific Islander ....○
Other ....○

BB090

91. What is your origin or descent? (If more than one, please mark below the one you consider the
○ most important part of your background.) (MARK ONE)

HISPANIC OR SPANISH:

Mexican, Mexican-American, Chicano ....○
Cuban, Cubano ....○
Puerto Rican, Puertorriqueno or Boricua ....○
Other Latin American, Latino, Hispanic, or Spanish descent ....○

NON-HISPANIC:

African:
  Afro-American ....○
  West Indian or Carribean ....○
Alaskan Native ....○
American Indian ....○
Asian or Pacific Islander:
  Chinese ....○
  Filipino ....○
  Indian, Pakistani or other South Asian ....○
  Japanese ....○
  Korean ....○
  Vietnamese ....○
  Other Pacific Islander ....○
  Other Asian ....○
European:
  English or Welsh ....○
  French ....○
  German ....○
  Greek ....○
  Irish ....○
  Italian ....○
  Polish ....○
  Portuguese ....○
  Russian ....○
  Scottish ....○
  Other European ....○
Canadian (French) ....○
Canadian (Other) ....○
United States only ....○

Other (WRITE IN) ________________________________ ....○

BB095

96. Did anyone at home read to you when you were young before you started school? (MARK ONE)

Never ○
Less than once a month ○
One to four times a month ○
Several times a week ○
Every day ○
Don't remember ○

BB096A--E

97. How many brothers and sisters do you have in each of the age groups below? Please include step-brothers and step-sisters if they live, or have lived, in your home. (MARK ONE OVAL FOR EACH LINE)

How many brothers and sisters do you have who are . . .	None	One	Two	Three	Four	Five or more
a. Three or more years older than you	○	○	○	○	○	○
b. 1-2 years older	○	○	○	○	○	○
c. Same age as you	○	○	○	○	○	○
d. 1-2 years younger	○	○	○	○	○	○
e. Three or more years younger	○	○	○	○	○	○

BB100

99. American families are divided below into three equal groups according to how much money the family makes in a year. Mark the oval for the group which comes closest to the amount of money your family makes in a year. (MARK ONE)

1/3 of American families make: $11,999 or less ○
1/3 of American families make: $12,000 to $19,999 ○
1/3 of American families make: $20,000 or more ○

BB101

100. ○ This time families are divided into seven groups according to how much money they make in a year. Mark the oval for the group which comes closest to the amount of money your family makes in a year. (MARK ONE)

$6,999 or less ○
$7,000 to $11,999 ○
$12,000 to $15,999 ○
$16,000 to $19,999 ○
$20,000 to $24,999 ○
$25,000 to $37,999 ○
$38,000 or more ○

BB103

102. How many rooms are there in your home? Count only the rooms your family lives in. Count the kitchen (if separate) but not bathrooms. (MARK ONE)

1	2	3	4	5	6	7	8	9	10 or more
○	○	○	○	○	○	○	○	○	○

BB104A--I

103. Which of the following do you have in your home? (MARK ONE OVAL FOR EACH LINE)

	Have	Do not have
a. A specific place for study	○	○
b. A daily newspaper	○	○
c. Encyclopedia or other reference books	○	○
d. Typewriter	○	○
e. Electric dishwasher	○	○
f. Two or more cars or trucks that run	○	○
g. More than 50 books	○	○
h. A room of your own	○	○
i. Pocket calculator	○	○

BB115

112. Do you plan to go to college at some time in the future? (MARK ONE)

Yes, right after high school	○
Yes, after staying out one year	○
Yes, after a longer period out of school	○
Don't know	○
No	○

B.3 Items from the School Questionnaire

SB002

2. As of October 1, 1980 (or the nearest date for which data are available), what was the total membership of your high school, and what were the memberships in grades 10 and 12? (IF NONE, WRITE "0")

Total high school membership	Grade 10	Grade 12
(A)	(B)	(C)

SB018

18. Please indicate whether each of the following courses are taught in your school as separate courses. (CIRCLE ONE NUMBER ON EACH LINE)

	Yes	No
a. Second-year algebra	1	2
b. Art	3	4
c. Auto mechanics	1	2
d. Calculus	3	4
e. Chemistry	1	2
f. Drama	3	4
g. Driver training	1	2
h. Economics	3	4
i. Ethnic Studies or Black Studies	1	2
j. Family Life or Sex Education	3	4
k. Geometry	1	2
l. Third-year Spanish	3	4
m. Third-year German	1	2
n. Third-year French	3	4
o. Home Economics	1	2
p. Physics	3	4
q. Psychology	1	2
r. Russian	3	4
s. Trigonometry	1	2
t. Wood or machine shop	3	4

SB027

27. Which of these facilities are available at your school? (CIRCLE AS MANY NUMBERS AS APPLY)

a.	Indoor lounge for students	1
b.	Career information center	2
c.	Occupational training center	3
d.	Media production facilities	4
e.	Remedial reading and/or remedial mathematics laboratory	5
f.	Subject area resources center(s) other than central library	1
g.	Departmental offices	2
h.	Teaching resources center for teachers' use	3
i.	Child care or nursery school facility	4
j.	Student cafeteria	5

SB029

29. A. Please indicate whether or not your school currently offers each of the following programs to students. (CIRCLE ONE NUMBER ON EACH LINE)

		Offered	Not offered
a.	Credit by contract	1	2
b.	Travel for credit	3	4
c.	Off-campus work experience or occupational training for credit	1	2
d.	College Board Advanced Placement Courses	3	4
e.	Student exchange program	1	2
f.	Alternative school program	3	4
g.	Special program for pregnant girls or mothers	1	2
h.	Continuation school	3	4
i.	Program for the gifted or talented	1	2
j.	Bilingual program	3	4

SB032

32. Please indicate whether or not this high school participates or has students who participate in each of the following federally assisted or financed programs. (CIRCLE ONE NUMBER ON EACH LINE)

	School/Students participate(s)	School/Students do(es) not participate
a. Upward Bound	1	2
b. Talent Search	1	2
c. Elementary and Secondary Education Act:		
1. Title I (Education of children of economically disadvantaged)	1	2
2. Title IV-B (Library and learning resources)	1	2
3. Title IV-C (Educational innovation and support)	1	2
4. Title IV-D (Supplementary educational centers and services)	1	2
5. Title VII (Bilingual education)	1	2
6. Title IX (Ethnic heritage studies)	1	2
d. Indian Education Act	1	2
e. Emergency School Aid Act (desegregation assistance)	1	2
f. School Assistance in Federally Affected Areas	1	2
g. Comprehensive Employment and Training Act (CETA)	1	2
h. Vocational Education Act of 1963:		
1. Consumer and Homemaking Education	1	2
2. Vocational Education Basic Programs	1	2
3. Vocational Education for persons with special needs	1	2
4. Cooperative Vocational Education Program	1	2
5. High School Vocational Education Work-Study Program	1	2
i. Junior ROTC	1	2

SB033

33. Please indicate whether or not your school uses each of the following criteria to classify students as handicapped. (CIRCLE ONE NUMBER ON EACH LINE)

	Yes	No
Standard tests for evaluating specific handicaps	1	2
Federal guidelines	1	2
State guidelines	1	2
Judgments and observations of school counselors and teachers	1	2

SB034

34. How many students in your high school are classified as handicapped? (IF NONE, WRITE "0")

Number of handicapped students: ____________

SB035

35. How does your high school usually accommodate the following types of handicapped students? (CIRCLE ONE NUMBER ON EACH LINE)

	Attend regular classes only	Attend some special and some regular classes	Attend special classes only	No students with this type of handicap in school
a. Multiple handicapped	1	2	3	4
b. Trainable mentally retarded	1	2	3	4
c. Educable mentally retarded	1	2	3	4
d. Hard of hearing	1	2	3	4
e. Deaf	1	2	3	4
f. Deaf-blind	1	2	3	4
g. Speech impaired	1	2	3	4
h. Visually impaired	1	2	3	4
i. Emotionally disturbed	1	2	3	4
j. Orthopedically impaired	1	2	3	4
k. Other health impaired	1	2	3	4
l. Specific learning disabilities	1	2	3	4

SB039

39. Please indicate the size of your high school's staff in each of the following categories. (ENTER NUMBER OR ZERO ON EACH LINE)

	Number of full-time (or full-time equivalent) personnel
a. Assistant principals and deans	________
b. Counselors	________
c. Classroom teachers	________
d. Curriculum specialists	________
e. Remedial specialists	________
f. Librarians/media specialists	________
g. Psychologists	________
h. Teaching aides	________
i. Student teachers	________
j. Volunteers	________
k. Contributed services	________
l. Security guards	________

SB054

54. Listed below are certain rules which some schools have. Please indicate whether or not each is enforced in your high school. (CIRCLE ONE NUMBER ON EACH LINE)

	Yes	No
a. School grounds closed to students at lunch	1	2
b. Students responsible to the school for property damage	3	4
c. Hall passes required	1	2
d. "No smoking" rules	3	4
e. Rules about student dress	1	2

SB056

56. To what degree is each of these matters a problem in your high school? (CIRCLE ONE NUMBER ON EACH LINE)

	Serious	Moderate	Minor	Not at all
a. Student absenteeism	1	2	3	4
b. Students' cutting classes	1	2	3	4
c. Parents' lack of interest in students' progress	1	2	3	4
d. Parents' lack of interest in school matters	1	2	3	4
e. Teacher absenteeism	1	2	3	4
f. Teachers' lack of commitment or motivation	1	2	3	4
g. Physical conflicts among students	1	2	3	4
h. Conflicts between students and teachers	1	2	3	4
i. Robbery or theft	1	2	3	4
j. Vandalism of school property	1	2	3	4
k. Student use of drugs or alcohol	1	2	3	4
l. Rape or attempted rape	1	2	3	4
m. Student possession of weapons	1	2	3	4
n. Verbal abuse of teachers	1	2	3	4

APPENDIX C

ESTIMATION PROCEDURES FOR SCHOOL FUNCTIONING EFFECTS AND DESIGN FOR FULLY NESTED MODELS OF SCHOOL EFFECTS

Appendix C

The comparisons carried out in chapter 7 are described below in more technical terms, to clarify the complexity that arises in the comparisons.

Let

x_{jh} = behavior or school characteristic j for student h

z_{ih} = background characteristic i for student h

δ_{ok} = 0 if student h is not in an other private school,
1 if student is in an other private school

For each behavior or school characteristic j (j = 1, ..., 13 for seniors, j = 1, ..., 12 for sophomores), two sets of equations are calculated, for the public school sector (k = 1) and the private school sector (k = 2). This is altogether 50 equations (2 x 12 + 2 x 13 = 50).

$$x_{jk} = a_{jk} + \sum_{i=1}^{17} b_{jki} z_{ih} + b_{jko}\delta_{ok} + \varepsilon_h \qquad (1)$$

Because δ_{ok} = 0 for all students in the public sector, this term drops out of the public sector equations.

Now let

$\bar{z}_{i\ell}$ = the mean of background characteristic i taken over a set of students denoted by the index ℓ. In this analysis, only two sets of students are used: ℓ = 1 ≡ Public school sophomores; ℓ = 2 ≡ Catholic school sophomores.

then for table 7.2.1 and 7.2.4 we use equation (1) to calculate

$$\hat{x}_{jk'\ell} = a_{jk} + \sum_{i=1}^{17} b_{jki}\, \bar{z}_{i\ell} + b_{j2o}\, \delta_{ok} \qquad (2)$$

When $k = 1$ (public school equation), then $\delta_{ok} = 0$, and $k' = 1$; when $k = 2$ (private school equation) and $\delta_{ok} = 0$, then $k' = 2$; when $k = 2$ and $\delta_{ok} = 1$, then $k' = 3$.

This gives, for each grade level:

$\hat{x}_{j1\ell}$ = the value of school or behavioral characteristic j in a public school (=1) for the average student from set ℓ. (When $\ell = 1$, $\hat{x}_{j11}$ for the sophomore equation is the same as $\bar{x}_{j1}$, the average value of characteristic j for public school sophomores.)

$\hat{x}_{j2\ell}$ = the value of school or behavioral characteristic j in a Catholic school (=2) for the average student from set ℓ. (When $\ell = 2$. $\hat{x}_{j22}$ for the sophomore equation is approximately the same as $\bar{x}_{j2}$, the average value of characteristic j for Catholic school sophomores.*)

$\hat{x}_{j3\ell}$ = the value of school or behavioral characteristic j in an other private school (=3) for the average student set ℓ. This can be seen to be equal to $\hat{x}_{j2\ell} + b_{j2o}$.

In table 7.2.1, the numbers in the Catholic - Public column are $\hat{x}_{j21} - \hat{x}_{j11}$. The numbers in the Other Private - Public columns are $\hat{x}_{j31} - \hat{x}_{j11}$.

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*The full equality holds only if the interaction terms between δ_{ok} and z_i are zero - that is, if there is no interaction between the background characteristics and the other private school characteristic j. In table 7.2.1 and 7.2.4, the values used for $\hat{x}_{j11}$ and $\hat{x}_{j22}$ respectively are the actual means $\bar{x}_{j2\ell}$ and $\bar{x}_{j2}$ respectively.

In table 7.2.4, the numbers in the Catholic - Public column are $\hat{x}_{j22} - \hat{x}_{j12}$. The numbers in the Other Private - Public columns are $\hat{x}_{j32} - \hat{x}_{j12}$.

To obtain table 7.2.2 and 7.2.5, a regression equation was estimated for each test score and each grade level, for the public sector.

Let

y_{1h} = test score of student h in the public sector (=1).

$$y_{1h} = a_1^* + \sum_{i=1}^{17} b_{1i}^* z_{ih} + \sum_{j=18}^{30} b_{1j}^* x_{jh} + \varepsilon_h \tag{3}$$

Then in table 7.2.2, the numbers in the row for behavioral or school characteristic j are obtained from the numbers in table 7.2.1 and the regression coefficients from eq. (3) as follows:

$$\Delta\hat{y}_{1j12} = b_{1j}^* (\hat{x}_{j21} - \hat{x}_{j11}) \tag{4}$$

≡ achievement increment in public schools (=1) which have a value for characteristic j equal to that found for the average public school sophomore (=1) in Catholic schools (=2) relative to the value found for students of the same background in public schools.

$$\Delta\hat{y}_{1j13} = b_{1j}^* (\hat{x}_{j31} - x_{j11}) \tag{5}$$

≡ achievement increment in public schools (=1) which have a value for characteristic j equal to that found for the average public school sophomore (=1) in other private schools (=3) relative to the value found for students of the same background in public schools.

In table 7.2.5, the numbers in the row for each behavioral or school characteristic j are obtained from the number in table 7.2.4 and the regression coefficients from equation (3) as follows:

$$\Delta\hat{y}_{1j22} = b^*_{1j}\ (x_{j22} - x_{j12}) \qquad (6)$$

≡ achievement in public schools (=1) which have a value for for characteristic j equal to that found for the average Catholic school sophomore (=2) in Catholic schools (=2) relative to the values found for students of the same background in public schools.

$$\Delta\hat{y}_{1j23} = b^*_{1j}\ (\hat{x}_{j32} - \hat{x}_{j12}) \qquad (7)$$

As is evident, various other comparisons could be made. The most prominent would be that obtained from an equation analogous to equation (3), but for the private sector, to give regression coefficients b^*_{2j} and values for achievement increments of $\Delta\hat{y}_{2j12}$, $\Delta\hat{y}_{2j13}$, $\Delta\hat{y}_{2j22}$, $\Delta\hat{y}_{2j23}$. This would show the effects of these school characteristics in the private sector, while tables 7.2.2 and 7.2.5 show these effects only for the public sector. These comparisons are given in a footnote in chapter 7.

It is useful to sketch in addition what an analysis with a fully nested model would look like allowing for differing effects of background characteristics in each school and differing effects of behavioral and school characteristics.*

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*We would like to thank Ronald Thisted for his helpful comments and suggestions in this section.

Let

$x_{k\ell(i(h))}$ = behavioral characteristic k of student h in school i in sector ℓ, or school characteristic k in sector ℓ as reported by student h (in school i).

Then the full equation for each of these characteristics k is

$$x_{k\ell(i(h))} = \alpha_k + \alpha_{k\ell} + \alpha_{k\ell(i)} + \sum_{j=1}^{17} \beta_{k\ell j}\, \bar{z}_{\ell(i)j} + \sum_{j=1}^{17} \beta_{k\ell(i)j}\, [z_{\ell(i(h))j} - \bar{z}_{\ell(i)j}] + \varepsilon_{\ell(i(h))} \qquad (8)$$

Where

α_k ≡ overall mean for school or behavioral characteristic

$\alpha_{k\ell}$ ≡ sector effect on k with a mean of 0

$\alpha_{k\ell(i)}$ ≡ school effect on k with a mean of 0 within sector ℓ

$\beta_{k\ell j}$ ≡ average effect of background characteristic j on k in sector ℓ

$\beta_{k\ell(i)j}$ ≡ effect of background characteristics j on k in school i in sector ℓ (mean of $\beta_{k\ell(i)j}$ over i in sector $\ell = 0$)

$\varepsilon_{\ell(i(h))}$ ≡ individual deviation, identically and independently distributed with a mean 0 and variance $\sigma^2_{\ell(i)}$

Then the sector effect on achievement through the behavioral and school characteristics k is found by:

$$y_{\ell(i(h))} = \psi + \psi_\ell + \psi_{\ell(i)} + \sum_{k=1}^{13} \gamma_{\ell k}\, \alpha_k + [\alpha_{k\ell} + \alpha_{k\ell(i)}] + \sum_{j=1}^{17} \lambda_{\ell j}\, \bar{z}_{\ell(i)} + \sum_{j=1}^{17} \lambda_{\ell(i)j}\, [z_{\ell(i(h))j} - \bar{z}_{\ell(i)j}] + \zeta_{\ell(i(h))} \qquad (9)$$

where

$y_{\ell(i(h))}$ ≡ test score of student h in school i in sector ℓ

ψ ≡ overall test mean

ψ_{ℓ} ≡ effect of sector ℓ independent of behavioral and school characteristics k (mean = 0)

$\psi_{\ell(i)}$ ≡ school effect independent of behavioral and school characteristics k (mean = 0 within sector ℓ)

$\gamma_{\ell k}$ ≡ effect of behavior or school characteristics k on achievement in sector ℓ

$\lambda_{\ell j}$ ≡ effect of background characteristic j on achievement in sector ℓ

$\lambda_{\ell(i)j}$ ≡ effect of background characteristics j on achievement in school i in sector ℓ (mean of $\lambda_{\ell(i)j}$ over i in sector ℓ = 0)

$\zeta_{\ell(i(h))}$ ≡ individual deviation, identically and independently distributed with mean 0 and variance $T^2_{\ell(i)}$.

With this model (which does not allow for any individual-level effects of behavioral characteristics on homework, and does not allow for the effects on achievement of interaction effects between background characteristics and school characteristics), the effect of school sector ℓ relative to school sector ℓ' on achievement through background characteristic k is given by either of two quantities

$$\Delta_1 y_{\ell\ell' k} = \gamma_{\ell k}\,(\alpha_{k\ell} - \alpha_{k\ell'})$$

or

$$\Delta_2 y_{\ell\ell' k} = \gamma_{\ell' k}\,(\alpha_{k\ell} - \alpha_{k\ell'})$$

The first of these quantities gives the effect on achievement in sector ℓ and the second gives the effect on achievement in sector ℓ'.

The number of schools makes this fully nested model not feasible to estimate. It is probably true that the greatest difference between the fully nested model and the model actually estimated lies in our use in equation (3) of individual-level values of x_{jh} in estimation of sector effects $b_{\ell j}$ of school or behavioral characteristic j on achievement in sector ℓ, rather than school means $\alpha_k + \alpha_{k\ell} + \alpha_{k\ell(i)}$ as given in equation (9) for estimation of sector effects $\gamma_{\ell k}$ of school or behavioral characteristic k on achievement in sector ℓ. The within-school variance in x_{jh} will in general make $b_{\ell j}$ greater than the comparable $\gamma_{\ell j}$.

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